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J. W. STEARNS, EDITOR.

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PUBLIC SCHOOL MACHINES.

Some years ago the school board of my native village in Illinois elected as principal of the high school a man peculiar in many ways. In personal appearance he looked like no one but himself, and, so far as the people of this village were concerned, he probably thought like no one but himsel. He was a man who had rare insight, and an almost exhaustless sympathy for human nature. He was a ready talker; had in a large degree what is known as the dramatic faculty; was very attractive, particularly to his pupils; and was fond of hunting and fishing. It was as a Nimrod that I made his acquaintance. After one year he removed to another village a few miles distant, where, at a school entertainment given under his direction, I heard a young man deliver a declamation which attracted special attention. Imagine, then, my interest in the recently published story entitled "The Evolution of Dodd," when I recognized in its author and one of the leading characters, my former friend, the school master, and in "Dodd," the young declaimer whom I had admired.

"The Evolution of Dodd" is a story written with the evident purpose of criticising our public school system. "Dodd" is a person known to all of us as "that boy." He is, however, possibly "a little more so" than "that boy" usually is, yet not not "more so" than "that boy" *was*.

Dodd introduces himself to his first teacher and to the public school system with "Mam said you was to take care of me." But his teacher appreciates only Dodd's bad qualities, and seems to misunderstand his whole nature. He ate up the kindergarten beans, and after many simi-

lar experiences with other amusement devices, removed to another district, where his father, a broken down minister of the gospel, had gone to visit his wife's parents. Dodd has now grown to be a very wilful and disobedient boy; but while here his grandfather gives him a remarkably salutary lesson in the form of a sound whipping. He encountered here another school master no better than the first, and Dodd soon falls into his old ways. The teacher, becoming jealous of him on account of his fine reading, picks a quarrel with him, but Dodd escapes a flogging by running away.

It is a long time before coaxing again brings him into a school room. His next teacher succeeds in bringing out the boy's good qualities. She does not know anything about *beans*, but she understands boys. She is sensible, honest; and Irish. This is the first school Dodd ever left with regret. He, however, goes on from bad to worse, until, at seventeen years of age, he enters Mr. Bright's school. He now takes pride in being turned out, and making himself noted as a "hard case." At length he shamfully curses the teacher in presence of the school. The board determines to expell him, but his teacher intervenes. Dodd is induced to apologize, and, after various experiences, finishes his studies. Mr. Bright's success is evidently because of his perceiving and encouraging Dodd's talents as a reader and a speaker. But the boy goes away, and this time sinks very low. Vice almost becomes his master. When master and pupil meet again Dodd seems to have lost all sense of honor. He deliberately imposes upon the sympathy of Mr. Bright. Finally he commits a crime, and to save him from jail, and to give him a last chance, his teacher buys him a railroad ticket, and gets him out of town. Dodd is not heard of again until he notifies Mr. Bright that he has reformed, and proves it by paying his debts.

Our author censures the public schools for having become "machines," i. e., for being conducted by systems, customs and habits which have become fixed and inflexible, thus crushing out vigorous, intelligent and interested activity on the part of the teacher; in other words crushing out individualism.

That there are grounds for such criticism no one will deny; but as to the source and nature of these difficulties much difference of opinion exists. Some of these causes are indirectly shown by our author:

1. The influence of "policy men." The majority of teachers in common and high schools are not judged by their real ability *as teachers.*

Patrons, no matter how highly cultivated they may be, do not visit schools often enough to form a fair estimate of the work done. How many public schools are there in Wisconsin in which each member of the board spends an hour a year in the school building? How many are there where the members of the board actually spend no time in the school room? Their estimate of the school depends solely upon the report of the pupils. Is it, then, any wonder that the number of "policy men" is large? The teacher who is obliged to show his ability to teach cube root or use the Greek moods and tenses in conditional sentences by the manner in which he says good morning, or by the number of calls (perhaps uninvited) he may make, is given very strong inducements to become a policy man. But, however strong these inducements may be, deep down in our hearts we honor him most who is most genuine, no matter whether a member from the nth ward will be controled thereby or not. Let the teacher himself dare to be what he would have his pupils become,—an individual, i. e., a person possessing, and acting as if he possessed, ideas of his own. Men harp on "originality," "courage of convictions," toleration, etc.; but how many know what these really mean? They are willing to be tolerant when their own opinions are advanced, or when this toleration involves matters of little importance, but inconsistency crops out here sooner than any where else. Who ever knew of a man who thought himself intolerant? Teachers are expected to be men interested in interesting things. And yet to be independent thinkers in matters of greatest importance, both personal and general, such as religion and politics, is almost to sacrifice their means of earning a living. They are to form active, independent, conscientious men, by being forbidden, on pain of removal, the exercise of the same characteristics in themselves.

2. The influence of persons who teach because of physical deformity or weakness. Our author says "I am sure I pity a cripple as much as any one; but children have rights which even a cripple is bound to respect. And no man or woman has a right in the school room merely from the fact of physical inability to work at some more muscular calling. When the State took charge of schools it removed them from the realm of charitable institutions."

3. The influence of a peculiar kind of self-made men. The one described by our author had "early adopted the idea that a self-made man was the highest type of the race: and to him a self-made man was one

who worked like the original Creator,—made everything out of nothing, and called everything good."

4. The influence of young men and women who teach simply for the purpose of waiting: the former for something else to turn up, the latter for some young man to turn up. However, it might be said that neither are willing encumberances of the profession.

5. The lack of scholarship on the part of teachers.

6. The influence of an over-wrought system. For example, our author says: "The kindergarten teacher is taught that it is almost a sin to impose tasks upon young shoulders; that the pretty little birdies (this always with a smile), enjoy themselves hopping about in God's sunshine, and that it is nature's way to have her children always happy. Happiness in this case seems to be doing nothing but simply being amused; a definition which finds acceptance among many, there being those who dream of heaven as a place where they can be as everlastingly lazy as they choose through all eternity, with celestial choirs forever tooting soft music in the distance, and streams of milk and honey flowing perpetually to their lips, all for amusement and delectation." And further: "A little girl was placed upon the platform (the prettiest in the class to be sure), and the pupils were asked to tell what they see. They all answered in concert, 'a girl!' A picture was then displayed, and the pupils were asked if the girl on the platform was the same as the one on the cardboard. The unanimous opinion was that they were not identical. The analysis of differences was not pursued to any great extent, but enough questions were asked the children to develop in them the thought that structurally and functionally the two objects designated by a common term were not the same. It was then duly explained to the class that there is still another way to make us think girl. The word 'girl' was then printed, and the teacher asked, 'who thinks he can take the pointer and point to the kind of girl I ask for?" The effect of this upon Dodd was to make him sullen. And when asked the reason he would not try, answered, "Because I've knowed that always."

Such institutions as the kindergarten may be all right when maintained by private individuals; but the task of caring for children so young as to require amusements of this sort, is more than a reasonable demand upon the experience, of the public school teacher, and the public purse.

7. The influence of an inflexible grade system. The point is made that some pupils have a natural aptitude in certain branches, and if we compel all to take the same course and in the same time, we prevent them not only from developing this originality but also from advancing in some of their studies as rapidly as they are able. While this is good advice, we think it should be taken with moderation. No one will deny that pupils should be advanced as rapidly as possible; this is the purpose of the school itself. But he who expects to supply all the wants of every pupil will speedily find that they will surround him as so many bees, each with so many stings as he possesses wants. In fact such a course successfully carried out would require at least one teacher for every pupil; for it must be remembered that Dodd is only one among many who have wants, and even legal claims upon a teacher's attention and time; and it would seem as if the pupil who is the most faithful would have the most valid claim. However well the maxim may apply to private life we question very sincerely whether a teacher in the public schools can profitably or rightfully leave the ninety and nine for the one. There is one serious objection to the public school system of America, *per se*. It arises from a direct conflict between two necessary demands, viz.: 1. Every pupil should be governed according to his wants, his disposition, his purposes, etc., nothing else is real justice to him. 2. All pupils have equal rights, and none can claim privileges over the rest; nothing else is real justice to them. But as their dispositions are unlike, and circumstances change, what is a teacher to do? Plainly nothing but attempt to secure a balance between these claims as far as possible. We do not mean by this that he should not take all possible pains with Dodd; but this boy had been humored until he imposed upon his teacher continually and deliberately. There is a question very strongly suggested by the story, viz.: Did not the forbearance of Mr. Bright only put off and make more necessary firm treatment in the end? There comes a time to all Dodds, sooner or later—usually sooner—when they should feel that there is no longer a possibility of imposing upon their teachers. This time should arrive whenever a pupil feels that he may knowingly and wittingly transgress with a fair assurance that the kindheartedness of his teacher will excuse him, and "not count this time." Such kind-heartedness becomes an educator of the very thing it would prevent.

But if public schools in being systematised becomes inefficient, and if

the persons who work these co-called machines are not suitably qualified, does the cause lie in the lack of natural endowments, or in the education of the teachers? We do not believe that teachers, as a whole, lack natural ability. The criticism has been made that our normal schools sacrifice scholarship to method, and this is a grave charge.

If students would remain in college as long as desired, doubtless all branches of their education would be provided for. But we must take them as we find them—demands and possibilities—and must solve only the one problem, viz.: How can the strongest men, or the men who possess the best knowledge and its best use, be developed? There can be no question but that a teacher should have a thorough knowledge of the various branches, and also understand the best methods of teaching. And if a student would remain a lifetime in a normal school it might be possible for him to acquire what might be called a complete scholarship, and also become master of the various pedagogic maxims. But he does not; and furthermore, he retains the privilege of disposing of his own time. To lengthen the course would not compel attendance. And so we suppose the normal schools do the best they can under existing conditions. But we sincerely believe that scholarship should be the first consideration. Of late the importance of method has been emphasized very much, particularly by county superintendents. This is well if done rationally and with due regard to proportion; but when a county superintendent counts method equal in average to *all other studies taken together*, we think the matter is carried too far. We have before us a certificate so averaged, in which one of the questions asked was the following: When is the principal "From the known to the unknown" violated in teaching? This is a perversion of method in the extreme, and one would not be surprised if such an educational mill should grind out its results most strictly in accordance with above quoted maxim, if only it were given time enough. The author of "Evolution of Dodd" is one of those who do not propose to give them time enough. But we believe that those who manage the school machines worst are usually not those who have pursued a thorough Normal course, but those who take a few month's instruction with the expectation that they will be enabled to learn how to use something which they think it unnecessary for them to have. They expect method to take the place of scholarship—the end is swollowed up in the means. And yet no one would say that ends should be secured—without means. Method is not evil, *per se*,

nor can it be dispensed with; for he who becomes a law unto himself only does away with the old method for a new,—it is method in either case. The attack should not be upon system as such, but we should seek the best and its proper use. While we expect and rejoice in the evolution of new and better methods, just at present we would rejoice more in their proper use.

Advancements should not be iconoclastic but evolutionary. Is it possible that men have been studying methods all these years only to arrive at conclusions which the young teacher had better disregard? Thought moves on by means and in completion of what has already been done, and for a traveler in an unknown land the most worn road is apt to be the best and shortest, for human nature is so constituted that men are not apt to go out of their way unnecessarily. We understand the gist of William Hawley Smith's story to be:

1st. That teachers must not expect to deduce a formula for managing anybody by studying "The Great Everybody;" the more conscienciously they carry out given directions the more they find that they apply to nobody.

2d. That teachers should be persons genuinely interested in the whole and highest welfare of their pupils,—as individuals.

3d. That they should strive to rule by arousing an interest rather than by forcing obedience.

4th. That schools are for pupils and not pupils for schools.

There are some detects in the way of phrases used, but if the book succeeds in enforcing these principles it will have done a good work for our public schools.

Henry C. Hullinger.

WINNETKA, ILL.

WHY DOES THE SUN RISE NORTH OF EAST IN SUMMER?

In reply to this question, a correspondent in the April number of the JOURNAL, page 165, in closing an explanation which, in the first part, has the merit of clearness and accuracy, says: "When the sun is 23½° north of the Equator it must rise 23½° north of the east and west plane, and therefore 23½° north of the east *wherever the sun rises on that morning.*"

The italics are mine. Substitute for the italicised words, "*to the observer at the Equator only*," and the statement will be correct. Any one who will take the trouble to make the simple experiment of measuring the angle in question will find it (in this latitude) much greater than 23½° at the time of the summer solstice; and it can easily be shown that as the observer's latitude increases this angle becomes greater, reaching its maximum, 90°, at the Arctic circle.

The question cannot well be answered in any one brief statement; but the reason becomes at once apparent when fundamental facts which give rise to phenomenon are clearly comprehended. To this end, the student will do well carefully to consider the following facts. Should any of these statements seem obscure or irrelevant let that fact suggest to the inquirer the necessity of a thoughtful review of the subject of Mathematical Geography:

1. Meridian circles are the only great circles that are perpendicular to the Equator and to the planes of the parallels.

2. At any point between the Equator and either Pole, a true east and west line lies in the plane of the parallel passing through that point.

3. The Day circle (the circle whose circumference is the boundary between sunshine and shadow,) is a great circle.

4. The sun's rays always and everywhere strike the earth in a direction perpendicular to the Day circle.

5. Every observer of the phenomenon of sunrise is on the Day circle; and, as he sees the sun in the direction whence the rays proceed, he sees it in a line perpendicular to the Day circle.

6. Only when the Day circle co-incides with a meridian circle, will the line referred to in 5 lie in the plane of a parallel; hence, only at the equinoxes can every observer see the rising sun in the east.

7. When the Day circle does not pass through the Poles, the sun rises *a variable angular distance* to the north or to the south of east; to the north when the north Pole is in the light, and to the south when the south Pole is in the light.

8. The amount of this angular distance varies with the latitude and with the season. For example, when the sun is one degree north of the Equator, the observer on the Equator will see him rise one degree north of east; but the observer at Milwaukee will see him rise considerably more than a degree to the north of east; while at 89° N. Lat. the sun on the same day, will rise 90° north of east, that is in the north

point of the horizon. So, at the time of the summer solstice, to the observer at the Equator, the sun rises 12½° north of east, but at a point on the Arctic circle, on the same day, he rises in the north, or 90° north of east.

9. Hence we reach the conclusion that the angular distance of sunrise north or south of the east point on any day is a variable quantity, whose limits are (for the observer at the Equator,) the amount of the sun's declination for that day and (for the observer at the most northern and southern points of the Day circle,) ninety degress.*

Silas Y. Gilson.

State Normal School, MILWAUKEE, WIS.

NOTES OF A VACATION RAMBLE—V. IN CALIFORNIA.

"Beyond the mountains in God's country," some one remarks, as the day wears away in crossing the Mohave desert. The distant peaks float and shimmer before us in the glowing air; the bewitching mirage forms itself towards the southern horizon—a broad lake with tall reeds and trees on its margin, far away over the gray sands; we climb a dull ascent and then sink into a dry and barren valley again and again, and still the mountain line stretches before us. The afternoon is waning as we cross the valley at its feet, which bears the omninous name of "Death's Valley"—sad record of the fate which there overtook many an adventurer pushing on in search of gold—and at length begin the ascent. The shades of evening are not deep enough to hide the contrast when we reach San Bernardino, and find ourselves among peach and orange orchards and cultivated fields.

Los Angeles is at present the largest city of southern California. It was delightfully cool there in the night, and at day break a thin mist hung over the place. It has more the air of a Latin than a Yankee city. The spirit of the early settlers, Spanish and French, still lingers about the place. One block from the hotel we come upon the oval plaza, surrounded by a row of evergreens, trimed into tall monotonous cylinders. The one story adobe buildings of the old Spanish town which still remain around it, have fallen into the hands of the Chinese, whose presence and habits render this vicinity very unattractive. Northeast from here lies what is left of the original Spanish town, a town gradually undergoing change, but still wearing on the whole an humble and dreary

aspect. A spur of high land from the mountains thrusts itself down into this town, terminating abruptly near the plaza in a beetling cliff, admirably suited for a citadel. Climb the steep road that winds up it and you command a broad view. Northwest lies the Spanish town; south extends the flourishing new city of Americans; and east stretch the highlands, upon which many elegant residences have been erected. From this position, in perfectly clear weather, you may catch a gleam of the blue waters of the Pacific, from which, in the early forenoon, comes the cool and gentle breeze that so delightfully tempers the climate. The fig and orange and banana trees in the door yards, the spreading pepper trees that shade the walks, the luxuriant geraniums, which climb to the second story windows and flush the whole side of the house with rampant blossoms, all remind you that this is a land of perpetual summer.

You may take the cars about noon and run down to Monica, and enjoy for a few hours the delights of the seaside. Another time you may prefer the mountains, and winding for two hours up a romantic valley, may spend the most of the day in the mountain paradise of Pasadena. Is it a town or a combined orchard and vineyard, upon which the encircling summits here look down? Finely dressed hedges, swelling up into arches over the entrance, surround the acres where rich grapes and tropical fruits flourish, while in the front of the place the beautiful mansion of the owner looks out upon a lawn, fan palms, rare exotics and gravelled walks. It is almost a surfeit of beauty and greenery—this mountain paradise.

The region of Los Angeles shows best what southern California may become, for here the most considerable effort and expenditure has been put forth. The great question of the country is water. Land is plenty and water scarce. In some parts a flowing stream can easily be diverted into irrigating ditches; in others artesian wells are successful; in others reservoirs must be created in the mountains, from which the waters can be distributed by canals. In most cases considerable expense is involved, stock companies own the plant, and the use of the precious fluid is strictly regulated. The riparian controversy, which divided attention last summer with the Grand Army meeting, is a sufficient illustration of the difficulties involved in this water supply. Do those settling on the bank of a stream thereby acquire a right to its waters? Can a syndicate go up into the mountains and divert the stream into a

reservoir which they control? In a particular case the supreme court decided that such action was unjustifiable, and this touched so many interests, involved so may properties, that an extra session of the legislature was called to consider the matter. In this and numerous other ways the conditions of the country favor the growth of monopolies, and make it hard for a poor man to get a footing.

Riverside lies in the Santa Ana valley, with the lofty peaks of the San Bernardino range standing sentinel over it. From a distance it looks, in the summer time, like a low lying patch of greenery in the prevailing brown of the mountains and parched valleys. It, too, is ideal in its way, a fairy land ot orange and lemon orchards, with beautiful residences, palm trees and flower gardens. The magnificent Magnolia avenue, bordered on either side for three or four miles with lovely magnolia trees, is one of its great attractions. Being farther from the sea, it suffers more from heat than Pasadena. At noon-day one wanders through the deserted streets, under spreading shade trees, by green hedges, hearing no sound save the rippling of the water running in the ditches by the road side. The leaves hang motionless on the trees, the thermometer reaches 112°; who but an insensate tourist would be walking out at such a time? But days of extreme heat are not numerous.

It is nearly twelve hours ride from this point to San Diego. The road takes you past the lovely Elsinore lake, down through the long, romantic Temecula canon, familiar to the imagination of every reader of Mrs. Jackson's "Ramona," and past the Margarita ranch where Ramona lived with the Senora Moreno. Then the gleaming waters of the Pacific burst upon you, and are in view most of the time for two hours. At length Old San Diego is announced, which remains essentially unchanged, as it was founded by Father Juniper and his devoted assistants one hundred and twenty years ago. The modern city lies nearer the bay. Here is the finest harbor south of San Francisco, an almost land locked bay, easily accessible and of great beauty. The climate is most monotonously excellent, bright, cool and delightful. In the summer the thermometer rarely gets above eighty, and in the winter occasional rains serve to inform the inhabitants that it is no longer summer. The background of the mountains, towards which the land gently rises from the bay, contains fertile valleys and mesas whose resources are as yet almost entirely undeveloped. The city is new, and yet in the making. It is scattered, with streets for the most part un-

paved, and buildings rising in every direction. Irrigation is easy here as an apparently exhaustless supply of water is obtained at a depth of from twenty to thirty feet. The opening of easy railroad communication must result in the rapid development of this portion of the State, and nature seems to have designed San Diego as the rival of San Francisco.

The latter has at least thirty years the start. Its history is identified with that of the development of the Pacific slope, and here the great problems of the slope come to a head. For example, the Chinese problem is here seen in its full extent. Elsewhere the Chinaman is simply a laborer, one among many, and one with marked peculiarities, but not in any way a serious element in the population. In San Francisco the orient and the occident, Indo-European and Mongolian, stand face to face. The conflict for supremacy is inevitable. In the very heart of the American city is a Chinese city—Pekin growing up in San Francisco. The two can no more mingle than oil and water; but the oriental city grows like a fungus, upon neglect and decay. It begins in some central locality, in buildings a little out of date and falling into decline; the neighborhood sinks into disrepute; other buildings do not readily find tenants, are neglected, at length are also occupied by Chinese. Thus the sore spot grows to alarming dimensions—from twenty to thirty blocks, a city in a city, fringed about with what is most disreputable in American populations. You may walk blocks in this quarter without meeting a white person. The very buildings have been half orientalized, decked with gingerbread-work, flashed with yellow and red paints, hung with monstrous lanterns and splay Chinese signs. The shop windows are Asiatic, dirty meat shops, displaying strange forms unpleasantly suggestive of some oriental bugaboo stories of our childhood; clothing stores stacked with loose blue sacks and baggy trowsers; oriental foot-gear—they make Yankee shoes and slippers but never wear them; curios stores filled with griffins and "chimeras dire," screens over which huge birds drag their dangling legs, and trumpery trinket boxes and ornaments; restaurants several stories high, in the basements of which the poor eat unsavory dishes with chopsticks, and in which respectability is arranged in layers, up to the top,

> "Where the gorgeous east with richest hand
> Showers on her kings barbaric pearl and gold."

There are in this region some fourteen Joss houses, veritable idol tem-

ples, in which incense is continually burning before hideous painted wooden idols, arranged in threes and fives on a ledge behind the counter which serves as an altar.

After the novelty of this wears off a little, some other features will begin to impress you. This population is enormously over-crowded. Dark, narrow alley-ways, shut in above by projecting balconeys, open here and there, and are swarming with people. Oppressive odors exhale from them; damp, dismal basements open upon them, out of which many persons issue. One eight of the population of San Francisco, or between thirty and forty thousand people, are probably living in this Chinese quarter. The misery and filth of many of them beggars description. Their vices appall one. The social unrestraint of heathenism is here. Opium dens above and beneath ground abound, where stupified victims are herded together day and night in the most intolerable conditions. Gambling is a mania with these people, and is pursued in defiance of law, in haunts carefully concealed, completely barricaded so that they can be entered only after long delays, and also well guarded. American laws are in fact almost inoperative in this quarter. The Chinese have some sort of courts of their own, and recognize the law of private revenge; but for one Chinaman to testify against another in our courts is almost certain death for him at the hands of assassins employed by Chinese clubs, who thus keep up oriental usages at the expense of American laws. Thus murders in this quarter almost invariably go unpunished, and iniquities of all sorts are beyond the reach of justice. Meantime these aliens live cheaply and underbid American labor, seeking especially all forms of light work, shoe-making, tailoring, making underclothing, laundry and so on.

This then is the Chinese problem: Shall an alien people, heathen, with obnoxious ways, who cannot assimilate with us, who defy our laws, be allowed to intrude themselves, by low living to underbid and drive out American labor, and to introduce debasing conditions into the midst of our cities? Do we want China in America?

But enough of problems. Go of a bright morning to the Golden Gate park; visit the conservatories of rare exotics; listen for an hour after dinner to the band, as you sit under umbrageous trees, looking off on green lawns, partarres of flowers, spouting fountains; then push on to Ocean Beach, and watch the half-reptile, clumsy seals crawling over each other upon the surf beaten rocky islets, and filling the air with their

harsh, dissonant gruntings. Or again, take the ferry to Oakland—it gives you a fine view of the bay and a taste of the ocean breeze; explore this Pacific Brooklyn, and enjoy the odor of the Eucalyptus trees in its suburbs; push on to Burkeley at the foot of the mountains, where the State University is, and sit for an hour in its grove of giant live-oaks; then try Alameda with its dignified quiet, and long shady avenues; and as you return let the sitting sun light up the shipping in the harbor, the bare brown hills, the city that climbs over them and the dancing bay at its feet. These pictures will linger long in your memory.

J. W. Stearns.

MADISON, WIS.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

As I see it, there is only one chance for the act requiring the local school authorities to provide "for instructing all pupils in all schools supported by public money, or under State control, in physiology and hygiene with special reference to the effects of stimulants and narcotics upon the human system," to prove an unwise one and that is in the failure of our teachers to exercise the necessary intelligence and good sense in giving that instruction. Such instruction is certainly needed, and now that the need has been recognized by the proper authorities it remains for us teachers to show ourselves equal to the task. Such an understanding of the subject matter of physiology as will be likely to induce a rational, voluntary submission to, and an observance of, the laws of health can hardly be attained by pupils of much less than the average maturity of twelve years; for this reason the law can hardly contemplate placing the subject lower in our courses of instruction than the average grammar school. A very large number of our pupils leave school soon after the grammar school age, and this being the case I infer that the law must insist upon this work being done for the pupils between the ages of twelve and fifteen years. For these reasons the suggestions which follow are intended to be understood as applying specifically to the subject only when pupils of the ages of twelve to fifteen years are being instructed.

INTRODUCTORY.

OBJECTS OF THE LESSON.— 1. To fix the meaning of the terms anatomy, physiology, hygiene, medicine and surgery. 2. To leave with the pupil the conviction that a knowledge of himself is needed.

In my hand is a pocket knife. I observe that it is composed of a handle and three blades. The handle has a metal lining terminating in thickened ends where the blades are secured by means of strong rivets. To the lining, on each side, is secured, by means of three rivets, a plate of bone. Between the two sides, at the back, are two steel springs held by a single rivet and separated, at the end carrying two blades, by a strip of metal. Each blade possesses a point, a cutting edge, a back, a shank, a shoulder and a thumb-groove. Now such a study of the human body, noting and describing its various parts, as we have done with the pocket knife, would be named a study of Human Anatomy.

Let us now consider the uses of the various parts of the pocket knife. The handle enables us to carry the blade through whatever is to be cut, and guards the blades when the knife is closed, preventing them from being dulled and from cutting the pocket. The springs are so constructed and connected with the blades as to hold them open or closed as desired. The thumb-groove is to assist in opening the blade, and the projecting back of the edge on the large blade is a stop which prevents the edge of the knife from striking the back and being dulled. Such a study as this of the various organs of the body is denominated Human Physiology.

In order that the knife may be maintained in good working order certain conditions must be maintained. Too high a temperature will destroy the temper of the knife. The blades must be kept dry, and especially we must not allow salt water to remain upon them, for if it should the iron would be eaten away and the cutting edge destroyed. It is not well to wrench the blade sideways while cutting hard substances, as if we do so the edge will be nicked; and only a certain class of substances may be cut with impunity with the knife. Such an inquiry as this in regard to the care of the various organs of the body, so as to discover how they may be maintained in good, healthy, working order, is denominated Human Hygiene, or the art of keeping well.

In case the knife has become rusty or dulled it must be subjected to treatment, and the perfect conditions restored so far as is possible — in

short it must be doctored. The art which aims to restore the human body to health is named medicine.

If a blade has been broken from the knife, or the handle has been split, or a rivet has fallen out, the knife requires mending. If the human body becomes similarly injured, as it occasionally does, there may arise the necessity of repair, and the art which aims to do this has been named Surgery, and those who practice it are called Surgeons.

It sometimes happens that a knife falls into the hands of a child who is entirely ignorant of its uses and of the proper way to handle it, and as a result the child either cuts himself, or someone, or something else, or he may seriously injure the knife. In this we are led to realize how important a sufficient knowlege is in order that so simple a mechanism as the pocket knife may be used with safety to itself and its surroundings. If a man is to manage a locomotive he must know first its various parts and when they are in their proper relations. He must know what each part is intended to do and how it does it. He must know what consequences will follow if certain parts are out of order. He must know what the engine needs in order to work effectively and how to supply it. He must know how to keep each and every part of his engine in perfect working order. He must know the natural motions and sounds of his engine so well that when the least unnatural sound or motion appears he is warned that something is wrong. He must possess a set of convictions which when, a thing has been seen to be wrong, will not allow him to rest until every thing has been set right. A man found wanting in any of these qualifications would be discharged from his post merely for the sake of the engine, to say nothing of the consequences which might be feared for those riding after it. The human body is much more complex, requires a much greater number of material supplies than the engine, and like that is liable to get out of order with improper handling, and hence it is that some knowledge of anatomy and physiology is indispensable to a rational understanding of the proper methods of caring for ourselves.

THE HEN'S EGG.

OBJECTS OF THE LESSON.—To teach: 1. What a cell is. 2. That the cell is the unit out of which the body is built.

If we examine a hen's egg we shall find on the outside a hard shell, beneath and lining which is a firm, light colored membrane. Passing

through the lining we come upon a clear, colorless and transparent layer of jelly-like matter called albumen, which surrounds a large yellow sphere called the yelk. If we examine the yelk we shall find it invested by a very delicate membrane, and to contain a small spot, in which is a still smaller one. Now the yelk of the egg with its yellow protoplasm containing the small, whitish spot or nucleus, in which is the still smaller spot called the nucleolus, constitutes, if seen before fertilization takes place, what physiologists call a cell. The white of the egg is simply a quantity of food, stored up in the outer membrane around the yelk, and protected by the hard shell, for the purpose of nourishing the little chick until it can leave the egg and be fed.

If we were to look at a thin section of skin, or of brain highly magnified with the aid of the microscope, we should find each to be composed of a large number of units essentially like the yelk of the egg so far as parts are concerned, that is of cells. These cells would be seen to be very much smaller than the egg-shell we have studied, and to have various forms, owing partly to the fact that they are yielding and lie against one another, and partly to the fact that they have different offices to perform. How the contact modifies the form of the cell we can illustrate very perfectly in this way: make a little soap suds in the bottom of a tumbler. First blow a single bubble and allow it to hang free in the air. It is spherical like the egg-cell. Now blow bubbles in the tumbler so as to fill it to overflowing. The bubbles which you now see surrounded by bubbles on all sides are no longer spherical, but possess flat surfaces bounded by straight lines. When you have seen bubbles massed together as described you have seen the form, but vastly enlarged, of many cells in our own bodies and in the tissues of plants, for the cell is the unit of plant as of animal life.

THE LIFE OF THE CELL.

OBJECT OF THE LESSON.—To teach that: 1. Life begins as a single cell. 2. The working unit in the body is the cell. 3. The cells are of different kinds and do different kinds of work. 4. The cells have a shorter life than that of the individual.

We have seen that the unfertilized yelk of the egg consists of a single cell, and hence the chick must begin its separate existence as one cell; but what is true of the chick is true of all animals and plants, unless we must except some of the very lowest organisms. When the time for

development has arrived, the single cell divides and becomes two, and these again divide, and so on until the complete animal or plant is formed.

Originally there existed but a single race of cattle, but in the hands of man these cattle have diverged from one another until we now possess many breeds, as Durham, Devon, Jersey, etc. Each of these breeds possesses peculiarties which enable them to meet certain needs of man better than the others. Just as cattle have diverged into breeds, so cells, under the various influences of nature, have grown apart, and now, in our bodies, constitute organs. Each of these several kinds of cells has a peculiar kind of work to do, which it can perform better than any other cells in the body can do it; thus we have muscle cells, so constituted that they change their form and thus enable us to perform motions; liver cells, which produce bile to aid in digesting food; and nerve cells, so sensitive as to respond to the tiny waves of light which go out from the various objects we see, and thus enable us to know they are there.

It is evident, then, that the working units in the body are the individual cells, each sort having its own peculiar work to do, and each drawing from the passing blood appropriate food. Just as, in the State of Wisconsin, there are people who are shoe-makers, while others are blacksmiths, farmers, merchants, tailors, or lawyers, etc., each individual of the many classes doing some portion of the work which constitutes the life of the State; so the cells in our bodies work individually, each kind doing that for which it has become, by doing, best adapted, and their aggregate workings constitute the life of the body.

The individuals of our various breeds of cattle die after a few years of activity, but before doing so leave others like themselves in their places, so that each breed continues to exist for centuries. So it is with the cells which constitute the various organs of our bodies. Each kind of cell lives its allotted period and then dies, but before doing so leaves others of the same sort to carry on the work. London has existed as a city for centuries, doing over and over again essentially the same things, but it is very rare indeed that an individual in it lives a hundred years; consequently each century must see the city of London composed of entirely new individuals, but London is London year after year. Now just such a state of affairs exists in our own bodies. The individual cells constituting the various organs have a period of life be-

yond which they never pass. Cells are born, pass through a period of youth, arrive at old age, and then die; but this allotted period is much shorter than the life of the average individual.

F. H. King.

RIVER FALLS, WIS.

READING CIRCLE WORK—FOURTH MONTH.

ELEMENTARY COURSE.

PAGE. Read from pages 186 to 230. HISTORY. Read to page 153. PHYSIOLOGY. Read chapters 10 and 11.

ADVANCED COURSE.

QUICK. Read the account of Rousseau, to page 138. One must neither follow Rousseau nor reject him altogether. He is fond of startling effects, and enjoys such sayings as "Take the road directly opposite to that which is in use and you will almost always do right." His mission was to arouse an artificial age out of its complacency and self-satisfaction; and one great good to be got from the reading of him is still that he raises so many questions, upsets, or tries to upset so many old opinions. The fantastic form of his statements ought not to prevent us from getting at the valuable truth they suggest, nor lead us to a hasty adoption of all his radical notions. It will be a valuable exercise, after you have thoroughly read this essay, to go over it again and make a list of the really important truths which are quoted in it from Rousseau. Most readers who make such a list will be astonished at its length. We append a list of some of the most striking teachings which are deserving of careful study to estimate what is true and what is exaggerated in them: 1. Freedom from restraint, p. 99. 2. The ideal boy, p. 101. 3. Of the governor or tutor and his functions, pp. 106 and 107. 4. The only lesson of morality proper for children, p. 120. 5. His idea of liberty, p. 123. 6. His views about books, p. 130. 7. Didactic teaching, p. 133.

FITCH. Read Lectures IV. and V. No teacher can fail to be benefitted by the simple and practical discussion of memory and the mode of training it given in the fifth lecture. It is especially important to grasp clearly the distinction between verbal (or mechanical) and rational memory, and to recognize when learning by heart is legitimate, for teach-

ers err constantly both by over doing and by underdoing this matter. So too we commend warmly the discussion of printed questions in books. In the second of the two lectures the reader will find the discussions of questioning very suggestive, and that of written examinations to cover both the value of them and the best ways to manage them.

SULLY. Read chapters VII. and VIII. In these we have a clear presentation of the reasons which underlie the objective method of teaching children. The closing sections of each chapter make a brief application of its principles to the work of training, and these should be read with constant references to the preceeding discussion.

POLITICS. Read chapters XX. to XXV. inclusive. In the discussion of money paragraphs 162 and 163 stating what makes gold and silver especially adopted to this use, and what the stamp signifies are to be most carefully mastered. So in the following chapter paragraph 177 contains what is most vital. Such also are 189 and 190, 199; 212, 218 and 224.

HISTORY. Read to page 478. The blackboard analysis p. 422 sets briefly before the eye an outline of the period; and on page 479 the important dates to learn are those of Henry VIII., and of Charles V. (the most important personage of the period), and of Queen Elizabeth. From a knowledge of these the others can be given proximately. Use the head lines (in full black type) as catch words to test your mastery of the contents of the lesson.

LITERATURE. In Brooke read to page 93. Dwell upon the important authors until you are master of what Mr. Brooke says of them, but pass over the others more lightly. The discussion of the three phases of latter Elizabethan poetry and the history of the rise of the drama are of great interest and value. In Swinton read to page 210.

IN THE LIBRARY.—THE PROFESSIONAL READING OF TEACHERS.

From the preface of Prof. G. Stanley Hall's Bibliography of Education.

The amount of general educational literature now published is very great. In Germany, during the few years that have elapsed since the repeal of the law controlling the introduction of text-books, their number has greatly increased. A trade catalogue for 1884 enumerates

about two thousand books and pamphlets, including new editions, which appeared in the German language during that year. More than three fourths of these were text-books, and the rest more general pedagogic treatises. One hundred and fifty-seven periodicals, devoted exclusively to education, were published in that language last year. A Berlin firm, in a letter now before me offers to supply six hundred and eighty-four thousand school reports, of the trade in which it makes a specialty, all for less than sixty thousand dollars, and states that the British Museum has laid in as complete sets of these as could be had since 1863, now some fifty thousand in number. Our own National Bureau of Education has now not far from sixty thousand titles of books and pamphlets and more important magazine articles, mainly pedagogical in character, in its unprinted drawer catalogue, which have accumulated since its establishment, mainly by exchange and gifts, etc., with little effort or funds for systematic purchase. Mr. Bardeen of Syracuse printed some years ago a list of between sixty and seventy American periodicals devoted exclusively to education, and a reliable editor informs me he has enumerated over three hundred American periodicals of this class (of course not including Sunday-school publications or college journals). There are about one hundred and seventy-five publishing houses in the United States which issue educational works, some of their text-books for lower grades of schools quietly reaching an enormous sale. Many of the educational journals are published by or are under the control of these firms, many if not most of which also have, or are ambitious to have, a full and complete set of text-books on all the chief school branches,—the number of which is still increasing,—as well as courses of pedagogic reading for teachers, all their own. In France, England, and Italy this activity is somewhat less, but is now rapidly growing.

That all this will result in good there can be little doubt, although the motives to produce the best in quality are at present poorly rewarded, and the quantity of material prolongs the slow but inevitable selective processes. All these fields of literature must be at least sampled, and used for special illustration of methods or as sources of information, in a perfect bibliography. But in the field of more strictly pedagogic literature, which is relatively limited, the material is yet far too great to be mastered in a lifetime of the most diligent reading, and the reading time of most teachers is quite limited. Hence they cannot be too select in their choice of books. They must assiduously cultivate the robust

moral power of ignoring the great mass of petty, under-vitalized and worthless reading-matter that is printed for them, which makes real knowledge impossible, and resolve—to adopt a well-known phrase—that the things they read shall be things worth reading.

The habit of reading what is beneath one's own level, whether fostered by ennui, idle curiosity, antiquarian interest, a sense of duty, or, worst of all, by a false sense of the authority of things printed, is so belittling, and the exact inverse of educational, that one would hardly expect educators to be so prone to it. Teachers who will maintain a proper degree of intellectual self-respect, and be as select in their reading as we should all be in the society we keep, who will vigorously reject the second best,—to say nothing of the tenth or twentieth best,—may, I believe, in the time at their disposal, and now squandered on print unworthy of them, reasonably hope to master most of the best, at least if they confine themselves to one language or one department.

To do this, however, not only is some hardihood of self-denial, but also some knowledge of the good and evil in pedagogic print, needed, and just this is what American teachers are at present seeking in more ways, I believe, than ever before. In seeking the best there is much to mislead and little to guide teachers.

In the general reading of every teacher, of whatever grade, should be included some work on the history of education, and some psychological and some hygienic literature. Every teacher should select some department or topic, connected in many cases probably with the teaching they prefer, about which the reading should center. In this field they would in time come to know the best that had been done or said, and themselves become more or less an authoriative center of information for others about them, and could make contributions that would render many their debtors, not only by positive additions to their knowledge, but in guiding their reading, which is one of the greatest aids one person can render another. As teachers thus gradually become specialists in some such limited sense, their influence will do more than has yet been accomplished to realize the ideal of making their work professional in a way in some degree worthy that high term, and they will be able gradually to effect a greatly needed reform in the present character of text-books, and all who would lead in public school education will slowly come to see the need of thorough and extended professional study. The field of education has now become so vast that the general reader

who attempts to master all the departments alike is almost sure to make shipwreck, no matter how brilliant his talent or how great his industry; while almost any teacher who sufficiently limits his work may hope to render real service to the cause, even with limited time and straitened opportunities. The interest in educational problems and educational reading is now perhaps deeper and more general in this country than ever before, and there are nowhere as yet any signs of abatement. It has never been so necessary to read and think diligently to keep from falling behind in the race, while on the other hand the rewards for the professional study of edncation have never been so sure and substantial. I believe that there should and will soon be a well-equipped educational library in every large center, accessible to teachers, that every teacher will own and know a few choice and well-selected educational books, and that all who have to do with education will realize the incalculable advantage which can now be derived from its serious, prolonged, and professional study.

SELECTIONS.

A COLLEGE EDUCATION.

The following extracts from a brief article in a recent number of *Harper's Monthly* is worthy of the consideration of parents who desire to give their children good educational advantages, and of young men who would do the best for themselves. It is specially timely when so many newspapers speak disparagingly of colleges, and some teachers seem anxious to confine their pupils to the narrow field which they themselves have explored.

"There is an occasional gibe at college-bred men as if they were too fine for practical service in affairs. But the fact is that they have had a powerful and controlling interest in such service. The New England emigration, which was the most momentous in history and the most influential in early American affairs, was led by college men. The most powerful revolutionary leaders were college men. The chiefs of the Constitutional Convention of 1787 were college men. The party captains and political champions during the Constitutional century have been, in most effective part, college men. It is not weakness, not an

impracticable tendency which breeds in the mind of the country boy the desire to go to college. On the contrary, it is the instinct of conscious power seeking to strengthen itself, and such boys have come to stand among great Americans.

"The college does not guarantee to every graduate all the virtues and moral graces, nor all knowledge and wisdom, nor genius and statesmanship and common sense. Neither can the common school, nor the academy do this, nor the counting-room, nor the work-shop, nor the caucus. But experience shows that the youths who earnestly desire the knowledge and the training which the college supplies, are those who become the men that the country wants. To like to read good books, to associate with generous and enlightened persons, to be frugal, and temperate, and cleanly of life, are evidences of tendencies and tastes which are every parent hails in his child with delight. In like manner, the taste and the desire for college education are proofs of the qualities which have been of the hightest public service.

Of course every private business and every public department are full of the most honorable and efficient men who are not college-bred, and their number is so great that there is sometimes a disposition to think that the college is a dilettante retreat, and an enervating rather than a strengthening influence. But this impression is, as we have said, historically inaccurate, and no college man, whether he be Freshman or Senior, or graduate, need doubt that he belongs to a company which has furnished the most efficient and illustrous leaders at every period of the national life.

The impulse which founds and sustains colleges, the feelings which bred in the heart of Daniel Webster's father the purpose to send his son to college, and which in the son's breast nourished the desire to go—this loyalty to knowledge as a source of power and to intellectual training as the means of its most effective exercise, is one of the profound instincts of human nature."

NOT to return one good office for another is inhuman; but to return evil for good is diabolical. There are too many even of this sort, who, the more they owe, the more they hate. There is nothing more dangerous than to oblige these people, for when they are conscious of not paying the debt, they wish the creditor out of the way.—*Seneca.*

WISCONSIN EDUCATIONAL DIRECTORY FOR 1887.

DEPARTMENT OF PUBLIC INSTRUCTION.

State Superintendent—Jesse B. Thayer.
Assistant State Superintendent—W. H. Chandler.

UNIVERSITY OF WISCONSIN.

President—John Bascom, Madison. After July, T. C. Chamberlin, Madison.

STATE NORMAL SCHOOLS—PRESIDENTS.

Duncan McGregor,	Platteville.	Warren D. Parker,	River Falls.
Albert Salisbury,	Whitewater.	J. J. Mapel,	Milwaukee.
George S. Albee,	Oshkosh.		

CHARITABLE AND REFORMATORY INSTITUTIONS.

Wisconsin School for the Blind—Mrs. Sarah F. Little, Janesville.
Wisconsin School for the Deaf—John W. Swiler, Delavan.
Industrial School for Boys—W. H. Sleep, Waukesha.
Industrial School for Girls—Mrs. Mary E. Cobb, Milwaukee.
State School—R. T. Roberts, Sparta.

CITY SUPERINTENDENTS

In Commission December, 1886.

(Those marked with a * are also Principals of Free High Schools.)

Appleton	A. B. Whitman.	Merrill	W. L. Holden.
Baraboo	W. J. Brier.*	Milwaukee	Wm. E. Anderson.
Beaver Dam	James J. Dick.	Mineral Point	Thos. Priestly.
Beloit	Fayette Royce.	Neenah	J. B. Russell.
Berlin	N. M. Dodson.	New London	C. E. Dickinson.
Brodhead, (vil.)	Burr Sprague.	Oconto	D. P. Moriarty.
Columbus	W. G. Coles.	Oshkosh	C. R. Nevitt, Jr.
De Pere	W. J. Pollock.*	Portage	W. S. Stroud.
Fond du Lac	Irving N. Mitchell.*	Prairie du Chien	C. S. Fuller.
Fort Howard	O. R. Larsen.	Racine	H. G. Winslow.
Grand Rapids	D. J. Cole.	Ripon	L. G. Carr.
Green Bay	J. C. Crawford.*	Sheboygan	George Heller.
Hudson	Simon Hunt.	Stevens Point	F. W. Cooley.*
Janesville	C. H. Keyes.*	Sturgeon Bay	F. J. Hamilton.
Kenosha	James Cavenagh.	Watertown	C. F. Viebahn.*
La Crosse	Albert Hardy.	Waupaca	J. H. Woodnorth.
Madison	Wm. H. Beach.*	Wausau	Chas. V. Bardeen.
Menasha	M. M. Schoetz.	Whitewater	M. Furlong.
Menomonie	Stella Lucas.		

PRINCIPALS OF FREE HIGH SCHOOLS.

December 11, 1886.

(Those marked with a * are also City Superintendents.)

John O'Hara,	Antigo.	L. W. Wood,	Augusta.
I. N. Stewart,	Appleton.	George Burton,	Avoca.
J. H. Ackerman.	Arcadia.	W. J. Brier,*	Baraboo.
Sumner H. Hilliard,	Argyle.	H. J. Menzie,	Bay View.

A. C. T. Hamlin,	Beaver Dam.
C. W. Merriman,	Beloit.
A. F. Rote,	Berlin.
Clarence E. Ward,	Black Earth.
Dwight Kinney,	Black River Falls.
J. G. Adams,	Bloomer.
C. H. Sylvester,	Boscobel.
Wm. L. O'Connor,	Brandon.
Elsie L. Salisbury,	Brodhead.
W. S. Axtell,	Burlington.
J. A. Jeffery,	Cadott.
S. A. Connell,	Chilton.
C. R. Long,	Chippewa Falls.
H. S. Tibbits,	Clinton.
. . . . .	Clintonville.
J. T. Sims,	Colby.
W. E. Bainbridge,	Columbus.
L. S. Hulburt,	Darlington.
Elias Dewey,	Delavan.
W. J. Pollock,*	Depere.
J. W. Livingston,	Dodgeville.
J. W. Nesbit,	Durand.
M. H. Jackson,	East Troy.
J. K. McGregor,	Eau Claire.
C. A. Goggin,	Edgerton.
D. D. Mayne,	Elkhorn.
J. A. Hancock,	Elroy.
C. C. Merriman,	Evansville.
C. G. Woolcock,	Fennimore.
Irving N. Mitchell,*	Fond du Lac.
J. Q. Emery,	Fort Atkinson.
L. S. Keeley,	Fox Lake.
J. H. Gould,	Geneva.
Philinda Whiting,	Glenbulah.
B. R. Goggins,	Grand Rapids.
J. C. Crawford,*	Green Bay.
C. U. Boley,	Hartford.
L. L. Lightcap,	Hazel Green.
Dennis J. Murphy,	Highland.
Emil V. Wernick,	Hillsborough.
Jas. H. Derse,	Horicon.
R. B. Dudgeon,	Hudson.
W. H. Hickok,	Humbird.
C. H. Keyes,*	Janesville.
H. T. Wieman,	Jefferson.
C. H. Leach,	Kenosha.
M. McMahon,	Kewanna.
John C. Camp,	Kiel.
H. L. Terry,	Lake Mills.
Eug. E. McDermot,	Lancaster.
J. E. Hoyt,	Lodi.
Wm. H. Beach,*	Madison.
W. A. Hodge,	Marshall.
Geo. S. Grubb,	Mauston.
Horace Gibson,	Mayville.
W. W. Kilgore,	Mazomanie.
H. J. Evans,	Menasha.
M. C. Porter,	Merrill.
A. W. Burton,	Merrillan.
Enoch Vernon,	Middleton.
Phillip Eden,	Mineral Point.
C. F. Niles,	Monroe.
L. S. Pease,	Montello.
Wm. A. Cundy,	Mount Hope.
Chas. Pickering,	Muscoda.
W. J. Bowell,	Necedah.
M. S. Freeman,	Neenah.
C. B. Oakley,	Neillsville.
E. E. Fowler,	New Lisbon.
Francis Cleary,	New London.
C. W. Dumont,	New Richmond.
C. W. Cabeen,	Nicollet.
R. B. McClenon,	Oconto.
J. B. Babcock,	Omro.
W. F. Gray,	Oregon.
R. H. Halsey,	Oshkosh.
T. H. Lage,	Pepin.
A. J. Smith,	Pewaukee.
Otto Gaffron,	Plymouth.
W. G. Clough,	Portage.
F. H. Blondell,	Port Washington.
G. E. Cabanis,	Potosi.
James Melville,	Poynette.
H. D. Densmore,	Prairie du Chien.
R. B. Hazard,	Prescott.
A. R. Sprague,	Racine.
A. B. West,	Reedsburg.
H. R. Smith,	Richland Center.
J. P. Huber,	Ripon.
Chas. Friedel,	River Falls.
C. F. Ninman,	Sauk City.
E. N. Livermore,	Sextonville.
J. G. Skeels,	Sharon.
L. D. Roberts,	Shawano.
E. G. Haylett,	Sheboygan
B. F. Anderson,	Sheboygan Falls.
Henry Jane,	Shullsburg.
L. H. Clark,	Sparta.
J. H. Terry,	Spring Green.
F. W. Cooley,*	Stevens Point.
Linda Whiting,	Stockbridge.
C. F. Cronk,	Stoughton.
Wm. O. Brown,	Sturgeon Bay.
I. M. Buell,	Sun Prairie.
G. W. Reigle,	Tomah.
C. O. Marsh,	Two Rivers.
. . . . .	Unity.
J. A. Aylward,	Viroqua.
M. G. Stillman,	Walworth.
C. F. Viebahn,*	Watertown.
L. L. Wright,	Waupaca.
F. C. Howard,	Waupun, Dod'e co
Henry Starks,	Waupun.
Hugh McIndoe,	Wausau.
A. W. Smith,	Wauwatosa.
E. W. Walker,	Westfield.
W. J. Hughes,	West Salem.
W. D. Gibson,	Whitewater.
C. A. Fowler,	Wonewoc.

COUNTY SUPERINTENDENTS

In Commission January 1887 to January 1889.

Adams	E. C. Morse	Arkdale.
Ashland	A. F. Garaghty	Butternut.
Barron	N. E. Carver	Chetek.
Bayfield	A. L. Ruggles	Washburn.
Brown	Geo. F. Steele	Depere.
Buffalo	Geo. Schmidt	Alma.
Burnett	Tena Nelson	Grantsburg.
Calumet	Henry Severin	New Holstein.
Chippewa	T. J. Kiley	Chippewa Falls.
Clark	Addie Neff	Neillsville.
Columbia	Zadoc Merrill	Pardeeville.
Crawford	James F. Burgess	Wauzeka.
Dane, 1st district	Sylvanus Ames	Nora.
Dane, 2d district	E. J. Collins	Verona.
Dodge	John T. Flavin	Watertown.
Door	J. W. Kinsel	Bailey's Harbor.
Douglas	Henry S. Butler	Superior.
Dunn	H. W. Reed	Fall City.
Eau Claire	Mrs. J. C. Sherwin	Eau Claire.
Florence	J. S. Penberthy	Florence.
Fond du Lac	Thomas E. Lyons	Mitchell.
Forest	James B. Monaghan	Monico.
Grant	Chas. L. Harper	Lancaster.
Green	J. L. Sherron	Albany.
Green Lake	A. W. Millard	Markesan.
Iowa	B. W. Gillett	Avoca.
Jackson	W. J. Hoskins	Merrillan.
Jefferson	J. A. Sheridan	Waterloo.
Juneau	M. L. Bunnell	Mauston.
Kenosha	Wm. Middlecamp	Somers.
Kewaunee	Wlastimil Swaty	Ahnapee.
La Crosse	A. O. Rhea	West Salem.
La Fayette	H. C. Martin	Darlington.
Langlade	J. H. Dawley	Antigo.
Lincoln	W. L. Holden	Merrill.
Manitowoc	John Nagle	Manitowoc.
Marathon	J. P. Briggs	Wausau.
Marinette	H. C. Todd	Peshtigo.
Marquette	Chas. S. Kelsey	Montello.
Milwaukee	Philip Lynch	Oakwood.
Monroe	J. P. Galiger	Tomah.
Oconto	H. Allan	Oconto.
Outagamie	R. H. Schmidt	Seymour.
Ozaukee	J. E. Reichert	Thiensville.
Pepin	L. A. Sahlstrom	Stockholm.
Pierce	G. L. Bowman	Prescott.
Polk	Lester B. Dresser	Oscoela Mills.
Portage	D. W. Heffron	Stevens Point.
Price	Anna Brosnan	Fifield.
Racine	Wm. G. Gittings	Racine.
Richland	A. H. Long	Richland Center.
Rock, 1st district	J. Boyd Jones	Evansville.
Rock, 2d district	H. C. Thom	Beloit.
St. Croix	Betsey M. Clapp	New Richmond.
Sauk	E. C. Wiswall	Prairie du Sac.
Sawyer	A. A. Safford	Hayward.
Shawano	W. A. Gralapp	Wittenberg.

Sheboygan	James Leahy	Random Lake.
Taylor	Ernest Pries	Medford.
Trempealeau	W. L. Cummings	Trempealeau.
Vernon	D. O. Mahoney	Viroqua.
Walworth	Leo A. Williams	Whitewater.
Washburn	G. A. Barker	Shell Lake.
Washington	Chas. F. Leins	Kewaskum.
Waukesha	A. J. Smith	Pewaukee.
Waupaca	Wm. Fowlie	Sheridan.
Waushara	Eugene Monroe	Pine River.
Winnebago	W. W. Kimball	Omro.
Wood	Geo. T. Rowland	Grand Rapids.

EDITORIAL.

THE *Educational Times* (London) says: "Oxford has really been utilized during the long vacation. A number of elementary schoolmasters were invited to make a brief sojourn in the University, combining instruction with a pleasant holiday, and forty-eight of them have eagerly taken advantage of the offer. Courses of lectures were arranged for them in the classics, natural sciences, moral philosophy and logic, at the moderate charges of 7s 6d for a single course, or 15s for all all the courses. They lived rent free and were boarded at the rate of 25s weekly. They boated, cricketed, and played tennis, and lionized at their own sweet wills; and when the little term was over, expressed a strong sense of the benefit they had derived from their stay at Oxford. In fact, the experiment has been successful beyond a doubt, and it may be hoped that it will be repeated." After all old England promises to be ahead of some of our States in the movement to bring the Universities into vital relation with the elementary schools, so that the latter may directly reap the benefits of these great establishments of learning. What such a "summer school" as this might do for the schools of a great nation by elevating their ideals and increasing the knowledge and enthusiasm of the teachers, can hardly be imagined. What is wanted is that the Universities should abandon their "aloofness," and recognize their responsibilities as educational leaders. They must identify themselves with movements to elevate and instruct the people, and make their culture and wisdom count for the common good. The University of Wisconsin has done something in this way: it has founded a chair of pedagogy, and identified itself through this with the teachers' institutes; it has begun to aid more extensively the work of the Teachers' Association; it has sought and established relations with a large number of high schools, by which their graduates are received into its classes on their certificates or diplomas; it has contributed powerfully to the establishment and work of the farmers' institutes. These things are of great service. Now let the example of Oxford be followed. Let the University be opened for four weeks during the summer for a teachers' summer school; let its libraries and cabinets be at their disposal under reasonable

regulations; let it offer lectures in at least four departments of work useful in the common schools. Will there not be at once a hearty response from the teachers of the State? What more delightful place than Madison for the summer holidays, for boating, tennis, base ball playing, and other amusements? What better company in which to spend the hours than such an offer would bring together? What more beneficial move to help the high schools and improve their work, than thus to bring University professors directly into contact with a large body of the principals and teachers of the high schools. The move is feasible, is demanded in the interests of the State. Why shall it not be inaugurated promptly?

TEACHERS' Examinations as at present arranged under our law are certainly productive of much harm. To begin with, they are a great burden—a burden and expense to the teachers, and a burden to the county superintendent, whose energies are needed in other directions. Yet as matters stand the great body of the teachers of Wisconsin are re-examined every year, and, what is worse, they are re-examined on exactly the same branches year after, and, as a rule, by the same person who has already tested them several times. There is certainly something farcical in all this, something unnecessary and insensate. Here we seem to behold the child pulling up his plants every little while to see if their roots are growing. In addition to the burden of this unnecessary work, it may be shown that evil comes of it. Teachers are kept by it in a very narrow rut. They must get ready for the next examination, and accordingly palter over familiar branches instead of trying to make some advance. The greatest need is that they should be driven out of the rut. There is nothing quickening in this going year after year over the same studies. They are not thus any better known. Go on to something more difficult, to something new, and thus the old and familiar will become more significant. But how can the teachers be driven out of the ruts? By a wholesome revision of our legislation. In Canada teachers may not present themselves a second time as candidates for a third grade certificate; they must advance to something better, or retire. In Indiana, the State Board of Education, which has authority, ordered six months ago, that after January 1, 1887, every applicant for a certificate must present a composition on one of a list of books, Ivanhoe, Esmond, The Spy, David Copperfield, The Scarlet Letter, etc. A still better plan would be, as it seems to us, to enact that each applicant appearing for a renewal of certificate must present himself in at least one or two additional subjects. This would substitute motion in advance for motion in a circle. It would say "if you expect to teach others you must grow yourself;" and pushing teachers on to higher attainments would create a love for learning, and tend to hold many to the work who now leave it for very ennui. Or, if this is not acceptable, limit a third grade certificate to schools of twenty pupils or under, a second grade good for two years, to district schools and schools of two departments, and require for the rest a first grade certificate, good for four years without re-examination. What we need is an

uplift, something to rescue us from the dead-grind of a system which puts a premium upon immobility, and enacts as a part of the law that "the teacher shall be narrow." Examinations are necessary nuisances, and not "a joy forever." It is desirable to have what are necessary, but to avoid by all possible means having a single one more.

LET us contrast two possible conditions of learning. In the one case a lad is busy with his lessons, and happily busy. Neither honors nor failures occur to him as possible in a matter of the sort he has in hand; therefore he works naturally and simply. When he talks with his instructor he says what he thinks, and says it frankly. He does not pretend to know what he has not understood; no trick to appear clever suggests itself to him, for he is not thinking of himself but of his subject. He is ingenious; takes his own road to results; rejoices to discover that they can be reached in several ways; laughs at his own stupidity; is alert to see, and learn, and exercise his powers, for the pleasure he finds in their exercise. He blunders and by so doing learns not to blunder, without having nine deducted from his average each time in order to make him careful. There is zest in his life, elasticity in his mind, a prevading sense of progress and of power transfusing delight through his whole being. In the second case, also, a lad is busy with his lessons; he is working to get a rank of one hundred. He enjoys getting one hundred because it is a pleasant thing to look down upon others from a superior position. He works nervously and anxiously, however, for he has a reputation to maintain. Here is a difficulty, but he does not like to have any one known that it bothered him. Possibly it will fall to some other boy; or it may be that, if it falls to him, he can cover up his igorance by a skilful dodge, or a shrewd question. Confess his ignorance! bless you, that would cost him a heavy deduction from his standing. He too blunders—we are all blunderers, men as well as boys, and it's a bad trait—but his blunder makes him unhappy, morose, perhaps ugly. Examination stares him in the face: his mind is tense but not elastic; his work shrewd but not genuine; his knowledge a formal, routine sort of affair, well adapted to show off on paper if he only gets started right. He fails—alas! the wreck. Marks, honors, reputation gone: but that is not the worst of it—that sort of wholesome confidence in himself which carries a boy through difficulties because he did not realize them—that confidence is shaken. He is more likely to blunder now than he was before. Poor fellow! He knows some things drearily, and for the most part wishes he did not have to study, and expects that some day he will escape out of the humdrum and drudgery which he barely tolerates, if he does not heartily detest it. What makes the difference?

IN this number we have the pleasure of laying before our readers the first of a series of papers by Prof. F. H. King, of the River Falls Normal School, on "Physiology and Hygiene, with especial reference to the use of stimulants and narcotics." We need not recommend the series to the careful study and use of our readers. It is apparent from the first article that the papers will present the

subject in a fresh and original way, guiding even beginners so clearly that they will be able to do something better with their classes than merely hear them recite the contents of their text-books. Here are simple experiments and observations which any one can make, and which will render the subject of real and abiding interest to the pupils. We hope to be able to present the papers regularly, every month.

THE time has not come to judge of the results of the administration of the Department of Public Instruction which closed with the last month; but it will be useful to recall a few of the principal public measures which have originated during its continuance. They will at least serve to make clear how the school system of the State is growing in solidity and effectiveness. First, as to the high schools: We have seen the system of special State aid to those institutions, which was at first a provisional measure for a limited number of years, extended indefinitely. Its results have been excellent. We now have one hundred and twenty-six of these schools which have complied with the conditions of the law and are sharing in the distribution of the fund. Then the high schools have been elevated in tone by the legislation requiring their principals to hold a State certificate or its equivalent, and placing the schools directly under the supervision of the State Superintendent. Irresponsibility and vexatious conflicts of authority are thus cleared out of the way, and proper stimulus to growth is furnished. Town high schools, with a special fund for their encouragement, have been provided for, and several of them are springing up in different parts of the State. The provision for pedagogical instruction in the State University, and for instruction in the theory and art of teaching in the high schools, looks to the steady improvement of the whole teaching force of the State. This end has been further sought by the introduction of a series of institutes for graded school teachers, six of which have been held during the present winter: and again by the annual conventions of the County Superintendents for the purpose of conferring together regarding their work, which ought to contribute powerfully to the uniformity and efficiency of the schools in the different counties. For the improvement of the rural schools the mill tax, which has largely increased the school fund to be distributed to them, will prove a most important measure. The justice of it, and also the wisdom of it, ought to be apparent to any reflecting person, for we are all interested in having all the children of the State educated, and even with this aid the heaviest burden falls on those who have the poorest advantages. In these ways at least the school system of the State has grown in strength and effectiveness during the past administration.

LET children know something of the worth of money by earning it; overpay them if you will, but let them get some idea of equivalents; if they get distorted notions of values at the start they will never be righted.—*Talmage.*

OUR DRAWER.

SHALL WE STUDY GRAMMAR?

Professor Gillan made a little experiment at the Institutes for Graded School Teachers held during the winter, the results of which, as given below, afford food for reflection. In all the Institutes the same list of questions was used, as follows:

Fill each blank in the following sentences with one of these words: "he," "she," "him," "her," "I," "me."

1. She says that you and . . . . may go.
2. Let not him boast that puts his armour on, but . . . . that takes it off.
3. It makes no difference to either you or . . . .
4. . . . . that cometh to me, I will in no wise cast out.
5. Who ate the oranges? It was . . . .
6. You and . . . . and . . . . will manage the affair.
7. If I were . . . . I would resist.
8. Was it . . . . that I saw? No it was . . . .
9. Will you let Mary and . . . . go home?
10. When you saw . . . . and . . . . we were walking.
11. May . . . . and . . . . read the letter?
12. She wants . . . . and . . . . to be prompt.
13. Oh, no, my child, 'twas not in war;
    And . . . . that kills a single man
    His neighbors all abhor.
14. Look at Lucy and . . . . ; we are running.
15. If you will let George and . . . . set together we shall be quiet.
16. It is neither . . . . nor . . . . that is wanted.
17. . . . . that overcometh will I make a pillar in the temple.

Fill the following with "we," "us," "they," "them."

18. That is wholesome doctrine for . . . . Americans.
19. It is not . . . . but . . . . whom he seeks to please.
20. Did you say that . . . . or . . . . were chosen?
12. She told Helen and . . . . boys to speak plainly.
22. Let none touch it but . . . . who are clean.
23. It was . . . . whom you saw.
24. Could it have been . . . . who did the mischief.
25. Whom did she call? . . . . girls.

Fill the following with "who" or "whom."

26. He knew not . . . . they were.
27. He married a French lady . . . . they say was very witty.
28. . . . . do men say that I am?
29. I see the man . . . . I think is to make the speech.
30. . . . is it you wish to see?

31. He is not the man . . . . I supposed he was.
32. . . . . do you wish to see?
33. She is a lady . . . . I know will interest you.

SUMMARY OF RESULTS OF WRITTEN WORK IN ENGLISH GRAMMAR IN INSTITUTES FOR GRADED SCHOOL TEACHERS.— 1886.

	No. of papers written.	No. of perfect papers.	75 per cent. or more.	60 per cent. or less.	Highest grade.	Lowest grade.	Av. standing of class.
Menomonie . . .	30	(a) 1	11	10	. . . . .	18 per cent.	66 per cent.
Wausau	26	(b) 1	6	12	. . . . .	18 per cent.	62 per cent.
Berlin	23	(c) 1	8	9	. . . . .	31 per cent.	65 per cent.
Whitewater . . .	26	. . .	10	11	97 per cent.	36 per cent.	66 per cent.
Beaver Dam . .	39	(d) 1	17	18	. . . . .	21 per cent.	66 per cent.
Janesville	42	(e) 2	19	14	. . . . .	29 per cent.	72 per cent.
Totals	186	6	71	74	. . . . .	. . . . .	66 per cent.

(a) Lina Williams.
(b) Ella J. Taylor.
(c) Elsie Bristol.
(d) Janet S. Levins.
(e) Anna E. Tennent, Jennie Patterson.

THAT PROBLEM.

OCONOMOWOC, Wis., Dec. 13, 1886.

Editor Journal of Education:

In the 12th arithmetical problem, page 520, of the last JOURNAL, I think there is an error as to the number expressing the *whole income*. The example will not "prove."

$2,500×.08=$200.00
$2,025×.07=$141.75

$341.75, which I think is the whole income, instead of $475.76 as stated. Respectfully, D. B. SMITH.

[Thanks for the corection.— ED.]

ORTHOEPHY AND ORTHOGRAPHY.

MR. EDITOR: At some future time please give us, through the columes of the JOURNAL, a scheme for teaching orthoephy and orthography.

A. BENOIT.

The task thus assigned is a large one, and the most that can be attempted at present is to offer a few suggestions bearing upon it. Possibly these will call out differences of opinion.

Orthography is nothing but spelling "writ large." Our September number contained some admirable suggestions regarding the teaching of this branch, taken from Mr. Fitch's "Lectures on Teaching." It is treated there in its proper relation, as subsidiary to reading and writing, and incidental to these studies. The spelling book is at best but a concession to the weakness and incapacity of teachers, and with the growth of real teaching power will be dispensed with. But one who has not power to secure results without it should not only use it but follow its plan, as probably better than any he will devise. The aim of spelling is to secure in the mind of the learner (1.) a distinct picture of how each word looks, so detailed that any defect in the written word will be at once detected. He must, therefore, (a) look at the word critically and analytically; and (b) practice writing it from its sound, and in this latter work compare his errors with the right form, that he may grow careful and critical. (2.) Spelling is a help to finding out new word forms when they occur, and, therefore, an oral exercise, which builds up the word syllable by syllable, is valuable. A critical habit is the important thing to secure, and can be gained only by constant vigilance to secure in all written work (1.) the avoidance of errors, and (2.) the intelligent and conscientious correction of such as occur. For the rest we refer to the extract from Mr. Fitch.

Scientific orthoephy, we venture to maintain, has no proper place in an elementary school. Children should be taught to pronounce words correctly, and to this end three kinds of work especially conduce: (1.) Careful correction fo errors when they occur. Classes of these may be pointed out and drilled upon with pupils old enough to profit by the generalization. (2.) New words should be patiently taught correctly when they are first encountered. (3.) Drill in making the different vowel sounds, and in articulating distinctly difficult combinations should be persistent and vigorous. Habits of dropping final consonants, of running succeeding words together, of eliding a syllable, of substituting one vowel sound for another, and so on, are to be cured by patient drill of this sort. If you know two or three general principles which you are sure will help your pupils to correct their own errors, these may be taught, but purely for practical ends. The word "orthoephy" may mean such work as this, and we should so interpret the word in the statute prescribing the studies for common schools. The scientific apparatus of technical orthoephy which the teacher has learned for his own examination may serve him, but will only cumber and annoy elementary pupils. Orthoephy, Webster tells us, is "the art of uttering words with propriety; a correct pronunciation of words:" and this art should be persistently taught by practicing the children in it. Much that passes at present under this name (improperly, we are satisfied) belongs to teaching how to use a dictionary, and much time and labor are wasted, we are satisfied, by the methods in vogue; but a discussion of them is not called for by the question.

LEARNING TO DO BY DOING.

In any pursuit outside of the school-room, what wise direction would be

given in the rule of learning to do by doing? What a sage remark would the physician make who should tell his patient to get well by getting well, or the master mechanic who should tell his apprentice to learn to make an engine by making one. Is the engine so like a wagon or a reaper that a wheelwright or a maker of a harvester can construct one? Are there not philosophical and mechanical principles peculiar to it which must be observed? Are not intelligence and skill necessary to its construction? Would not doing without knowing, waste valuable material without producing any useful mechanism? Is there not a right and a wrong way to build a sentence or construct a composition? Are there not some things which the pupil must know before he can do? True, he must do if he ever learns, but the doing can not be divorced from the knowing nor precede it in point of time. The pupil comes to school with vicious habits of speech that have been acquired at home and in the street. His doings with those acquisitions will only confirm them unless corrected—in this work shall the pupil be forever corrected, or may he be taught to be intelligently self-directing? Are there not principles of general application that will govern his efforts? Can no deduction be made that will apply to all such cases as "I might have went." "A strange sail was saw from the mast-head?" What are such deductions but definitions or rules? If their application will enable him not only to correct his mistakes but avoid making them, how can the learning of them impede his progress? How can any real intelligent advancement be made without them? We repeat that doing and knowing are inseparable, contemporaneous processes. It is no more true that the pupil learns by doing than that he learns by knowing. His corrections are valueless apart from the reasons for them; but the reasons soon become the laws which forbid their repetition. It is true that during the imitative period of early childhood, when the memory is receptive and tenacious, empirical correction is useful and necessary; but it can do but little toward eradicating habits that are rooted in years of infraction of the laws of speech. Hence we see the folly of those who are continually crying out against the learning of definitions and rules and demanding the substitution of practice work. The one is the complement of the other, and neither can be pursued to the exclusion of the other with any beneficial result.

O. E. WELLS.

MANAWA, WIS.

IN THE SCHOOL ROOM.

THE TEACHERS' ASSOCIATION.

The executive session of the Wisconsin State Teachers' Association opened in the agricultural rooms at the capitol, on Monday evening, December 27, 1886, with a large attendance. The evening was devoted largely to a lecture by Rev. Charles S. Lester, rector of St. Paul's (Episcopal) church of Milwaukee. His subject was "Religion in the Public Schools."

Prof. Rood, of Palmyra, introduced a resolution, which was adopted, for the appointment of a committee of three to inquire into the State laws concerning county certificates, and to recommend to the coming legislature the passage of some law whereby teachers will be induced to try for higher grades of certificates. A committee, composed of Prof. Rood, of Palmyra; Assistant Superintendent W. H. Chandler, of Madison, and County Superintendent C. L. Harper, of Lancaster, was appointed.

TUESDAY MORNING.

This morning the meeting was called to order at 9:15 by President Anderson. After a few remarks by Prof. W. D. Parker, the railway agent of the Association, the ballot of the Association was cast for Principal A. W. Smith, of Wauwatosa, as Treasurer of the Association.

The committee to respond to the question: How May the Work of the Association be Extended and Made More Useful to All Classes of Teachers? failing to report, remarks on the subject were called for. Prof. W. G. Clough, of Portage, voiced some of the criticism he had heard in saying that the papers were usually pleasant to listen to but too general. They were not particular enough to reach all the teachers. He thought the suggestions contained should be such as could be utilized. The work of the Association should not be institute work, but its aim should be practical, and hence more attractive to the mass of teachers.

A letter from Mr. Sprague, of Racine, the chairman of the committee on the Proposed Legislation for the Education of Feeble Minded Children, contained the suggestion that a committee of three members of the Association be appointed to present the matter at the coming session of the Legislature; the members to be such as could be present at the session and would urge the investigation of the subject of the custody and education of such children; that the teachers gain the assistance of the press by using their influence to convince its representatives of the great necessity of such action. Hon. W. H. Chandler lamented the lack of opportunity for needed consultation on this subject among the members of the committee. He thought, though much diversity of opinion existed as to what could be accomplished among these unfortunates, the experience of sister States,—Michigan in particular,—shows that much can be done for this class. So much has been accomplished for the blind and mutes, that courage may be gained for this work. It needs persons of adaptation to make it a success. He hoped the members of the Association would co-operate. He was in favor of a State school. There the feeble minded could be educated so as to become at least semi-self supporting. In many cases, an incipient condition of feeble-mindedness could be overcome, when if left to themselves they would drift into imbecility. Prof. Salisbury said that the Association was discussing a question that had been before it many times. They had been in the habit of assenting to it, but little had been accomplished. There were three reasons why a State school was desirable: 1st, Because of the re-

lief it would afford to families; 2d, It would relieve the community; 3d, Because of the benevolence in doing for such children. It was a question whether the families deserved such relief, but the communities in which the children were found and the schools to which they were sent, and where they proved such an annoyance, certainly did deserve and require such. Few of such children were perhaps seen in private life, but the records of such schools as the one at Delavan would show a great number. Children were often sent to such schools because their friends thought they were mute, whereas they were imbecile. The success of the new State school established lately at Sparta for dependent children was problematical just now, and the Legislature might wish to wait to see what the result was, before they established a new one of the kind needed to educate the feeble minded. Superintendent Anderson thought the gentleman spoke not exactly to the question propounded. President Salisbury moved that a committee of three be appointed, to report before the close of the session of the Association what action the Association should take in regard to the work of educating the feeble minded. The motion was carried, and the chair named President Salisbury, W. H. Chandler and Prof Chamberlin as members of that committee.

After a short recess, President Salisbury occupied the chair, while Superintendent Anderson read the report of the committee on a course of science work for the common schools. In a good system of teaching natural science, object teaching should be the introduction, but it should not have language for its aim. Lessons should follow as a natural sequence. No hasty telling should be allowed to interfere with the natural development in the child's mind. Familiar qualities should not be dwelt upon. Prof. J. W. Stearns, a member of the committee, thought it necessary to emphasize one,—the peculiar mental effect of this work, which trains children not only to get things from books, but to get intellectual stimulus from contact with things. Such education is so different from many of the present methods that its growth will be slow. Some rather depreciate the value of the knowledge gained. Physiology should be taught early. Upon it depends physics and chemistry, so a knowledge of those subjects should be given. He thought the miscellaneous stage of education too much emphasized in the paper, and that not enough provision was given to the elementary knowledge of the sciences. Mr. West thought it was not wise to enumerate so much apparatus as was specified for use in the report. It might be a source of discouragement to teachers who could, however, find enough if they sought for it in the proper spirit. Mr. Hardy felt the need of such instruction but lamented lack of time. Superintendent Anderson thought existing plans might be abridged so as to meet the emergency. Mr. Rode thought too much time was spent in repeating what the children already know. If this were modified, time could be found for science work. Mr. Briggs thought it might be well for the Association to place itself on record by reviewing the time spent and the time necessary to spend on many of the elementary branches. Mr. Anderson moved the appointment of a committee composed of Dr. Stearns, Mr. Keyes and Mr.

Beach to accept, complete, revise or amend the report as presented. The motion was carried.

Professor King, of River Falls, then presented the subject of "Methods of Teaching," and the subject of "Atmospheric Movements." He illustrated the subject by a series of very interesting charts, showing the action of the air under diverse influences.

A resolution was then made and adopted, to the effect: "That in view of the great importance and the universal application of the subject of the lecture of Rev. C. S. Lester, and in view of the extreme views presented, a copy of the same be respectfully presented for publication in the WISCONSIN JOURNAL OF EDUCATION and the lecture and subject be referred to a committee for report and for discussion at a future meeting of this Association."

The meeting then adjourned until 2 P. M.

TUESDAY AFTERNOON

The session was opened by an article by Prof. E. A. Berge, of the department of zoology in the State University; subject, "Science Teaching in the High Schools." Prof. G. W. Peckham who was to have spoken on the same subject, being unable to be present, Prof. Rogers, of the Milwaukee High School, was called upon for a sketch of the work done there.

During the first two years of the course the students studied "The Science of Common Things." The experiments were mostly performed by the teachers, the pupils using note books. The notes were re-written by the pupil and helped to advance the language work.

Prof. Rogers would disagree with Prof Berge, inasmuch as he found the principles of chemistry could be given to the younger pupils and easily comprehended by them. Chemistry as a study was taken up during the latter half of the second year and the first half of third.

In response to inquiry, Prof. Berge said he found Milwaukee pupils well prepared for their work, but Milwaukee work was no criterion for other schools, as there the teachers were more permanent and methods uniform. Where teachers are changed as frequently as in many High Schools, boughten apparatus was necessary. The course of botany and zoology in Milwaukee was based upon microscopic work. He would like to see it in any other High Schools.

Mr. Keyes thought something could be done to organize a summer school such as Prof Berge had suggested in his paper. A desire for such instruction as it would give, was growing among the younger teachers of the State.

Mr. Gibson found that because of financial or other reasons, many ambitious and progressive teachers, desiring such knowledge, were unable to attend either University or State Normal Schools.

Mr. Keyes' motion that a committee be empowered to organize a summer school, having for its aim the presentation of methods of teaching science, was postponed for consideration until the following day, when it was unanimously carried. The school is to be under the direction of the University.

A. J. Andrews, of the State Normal Schools, was to have introduced the subjects, "Physical Education in the Schools," and "Limitations the High School Teacher Does Well to Consider." He was unable to be present on account of sickness. According to previous arrangement, E. R. Smith presented the negative side of the question. He thought the teacher should direct the sitting and standing of the child and its manner of breathing and all other conditions that promote the health of the child; but *gymnastics* lay outside the legitimate work of the school room. For reasons, he advanced: Pupils, as a rule do not appreciate their value. Hard working parents had little interest in them. There was lack of training on the part of the teacher as well as of proper rooms and apparatus. The clothing of pupils, boys as well as girls, forbade any extensive exercise. Many have been injured by it, and there was an unequal need for such exercise among pupils of the same class.

In response to a question, Superintendent Anderson said, in some schools of Milwaukee the practice of gymnastics or calisthenics had fallen into disuse; in others the exercise was quite regular.

President Salisbury hoped the Association would not be hasty in accepting the sense of the paper. Mr. Andrews had shown them at Whitewater what could be done for a rational, physical training. There was less resistence from the pupils than had been expected. They worked with enthusiasm and effect.

Mr. Gibson had found the vitality of the younger pupils in Cincinnati sapped by the strain put upon them by the exercise because of the lack of a large hall and conveniences for ventilating.

President Anderson named Miss Rose Schwartz, of Oshkosh, as member of the advisory committee, in place of Mr. Swiler, of Delavan, whose term of office had expired.

Mr. W. J. Desmond read a paper on "Over Elaboration in Primary Teaching."

The Association then adjourned until evening, and a session of the High School section followed. The subjects discussed were: 1. What time should be given to the study of Latin, as a preparation for University work, in the High School. 2. In what order should the authors be taken up. 3. Who should be encouraged to take up Latin.

The following resolution was proposed: That four years is necessary to complete the full High School course in Latin, and three years is the minimum that should be recommended.

Prof. Heritage gave the requirements for admission to their University as four books of Cæsar, six orations of Cicero, six books of Virgil, and Sallust's Catiline. Ann Arbor required more and Madison could not accept less without injury to her standing.

Mr. Keyes needed four years in which to complete his work, and thought less time could not be given without injury to the University.

Superintendent Hutchins thought three years enough if pupils were mature and strong.

Mr. Clough found a tendency in his district to German rather than Latin.

Mr. Clark, at Sparta, could not give more than three years to Latin because of the opposition of the Board.

Dr. Stearns stated as the aim of the study of Latin: Discipline to the mind through accurate translation—a full appreciation of thought and literary form and a knowledge of the literature.

Action was then taken upon the resolution, which was lost.

In discussing topic 3, Mr. Clough favored the study of Latin for at least one year, by every pupil in the High School as a means of extending his knowledge of English.

Mr. Hardy considered a course in Latin the best preparation for work of life.

The discussions of this section were especially active, interesting and general.

In the evening Mr. Chandler moved the appointment of a committee to investigate the action of other States in regard to the education of the feeble minded, to collect all the data of interest, and if thought best, to urge action upon the Legislature. The motion was carried.

Mr. Cheney here announced that the next session of the National Association would be held at Chicago, July 12 and 13. Teachers could purchase round trip tickets to Chicago at the cost of one fare and two dollars, payable at the depot as usual; the latter was to defray the cost of a membership ticket in the Association. He hoped the teachers would be pleased at the change from sultry Topeka to the summer resort of Chicago and surpass their attendance record of '84.

Mr. Chandler made a humorous but earnest speech in favor of the Chicago meeting.

Dr. Carpenter rejoiced at the prospect it offered for the recreation of the tired teachers.

W. H. Chandler, Assistant State Superintendent, was chosen a delegate to represent the Wisconsin Association at the meeting of the National Association at Chicago in July.

Dr. Stearns here made a motion, which was carried, that the President appoint a committee to arrange plans for exhibit and attendance by which Wisconsin could be properly represented at the National Association.

A. J. Hutton announced that the summer session of the Wisconsin Association would be held at Milwaukee, Wednesday and Thursday, July 6 and 7, 1887.

Then followed a very able and interesting lecture by J. L. Dudley, of Milwaukee, on "The duty of the State in Educational Work."

WEDNESDAY MORNING.

Mr. Smith moved that the committee suggested by Dr. Stearns be authorized to: 1. Memorialize the Legislature for an appropriation to defray the expense of the Wisconsin exhibit. 2. To appoint committees and sub-committees to assist in preparing materials. 3. To formulate such rules as shall be of use to exhibitors. 4. To make an inventory of exhibit. 5. To promote the interest of the Wisconsin teachers so as to secure a full attendance at the National Association.

The chair appointed A. J. Hutton, J. W. Stearns, S. A. Hooper, C. H. Keyes, and F. S. Frawley.

The committee on Certificates of Teachers reported through Mr. Rood that the objections to the present system were: 1. There was not sufficient distinction in the benefits derived from holding the different county certificates; a third and second grade being valid for one year, a first grade for two years. 2. Certificates obtained in one county were not valid even in an adjoining county. 3. Periodical examination of teachers imposed a great burden of time and expense upon both teacher and superintendent.

The committee would recommend: 1. That the first grade certificate remain in force for three years, the second grade for two years and the third grade for one year. 2. That Co. Superintendents be allowed to renew certificates of teachers who have been clearly proved to be well qualified for their work. 3. That the State Superintendent appoint a State Inspector who shall prepare questions to be used at the county examinations by such teachers as desire. Each applicant shall pay $1. The papers prepared shall be sent to the State Inspector, and certificates of first or second grade good in any county, issued by the State Superintendent at the recommendation of the Inspector.

Prof. Pray thought with four county certificates and two State certificates there were enough without increasing the number.

Prof. Clough thought it would be well to have the State issue the first and second grade certificates and to allow the County Superintendent to issue only the third.

Prof. Brier feared the labor of the inspector would be too heavy, as most teachers would prefer the new State county certificates.

The report of the committee was not accepted, but by the will of the assembly a committee consisting of W. H. Chandler and Superintedent Thayer was appointed to urge upon the Legislature such changes in the present system of certificates as they thought best.

Superintendent Hardy then read an address, "What Instruction in Civics Should be Taught in Public Schools."

Chair appointed a committee consisting of C. H. Keyes, Prof. King and Prof. Slumf, on a summer school of science, to be held at the State University for three or four weeks during summer, for the purpose of giving teachers scientific instruction and to instruct them in the use of scientific apparatus.

Thanks were then voted to Gov. Rusk, the Congregational church of Madison and the railways of the State for courtesies received.

The association then adjourned.

SUGGESTIONS FOR GEOGRAPHY.

Call attention in every case to the scale of the map, and give exercises in judging approximate distances. Show e. g. in a map of England what number

of miles is represented by the length and breadth respectively, and lead the scholars to exercise themselves in determining the approximate distances between towns.—*Fitch.*

The mathematical lines used on maps, the zones, and general distribution of land and water masses, should be taught by means of a good globe. No attempt should be made, at this stage, to teach mathematical definitions, but pupils can easily be taught to name and locate the parallel lines, the meridian lines, the equator, the tropics, the polar circles, and the poles, and they can also be taught the seasons of the several zones, and many interesting facts of climate, productions, etc. The final review of this text-book course will be sufficiently early to teach the formal difinitions of mathematical terms; and a full explanation of the change of seasons may be deferred until the study of physical geography is reached.—*White.*

In using the school text-book let the advance lesson be read over aloud in the class, and then direct your scholars to mark with a pencil, (better talk about what is most important but spare the text-book—it is a bad habit to mark this up), a few leading points to be committed to memory. The following direction from the Massachusetts State Course of Instruction embodies a valuable general rule for guidance: "As travel broadens ideas, so will the study of geography if rightly pursued; and pupils may increase the value of their lessons by reading books of travel and stories of great explorers. The teacher can afford to deal sparingly in statistics, latitudes, longitudes, areas and heights, and to avoid dry definitions and detailed map questions that lead only to a recital of names of places destitute of associations. Such knowledge is not worth the time it takes to acquire it, though it may secure rapid and accurate recitations."—*Swett.*

LANGUAGE EXERCISES.

I. MISUSED WORDS. Many writers and speakers persist in misusing words, and it is the duty of the teacher to do his utmost to counteract the influence they exert toward establishing their misuse. Here are a few words commonly misused in the newspapers and elsewhere: "transpire" for happen, "executed" for hung, "balance" for remainder, "depot" for station; "observe" for said, "locate" for settle, "decimate" for thin out, "ovation" for enthusiastic cheering, "section" for region, "relation" for kinsman, "humanitarian" for humane, "expect" for think, "evacuate" for go away, "couple" for two, "citizen" for person, "caption" for heading, "bountiful" for abundant, "antecedents" for record or past, "avocations" for vocations, and so on. Many mere combinations of letters passing in the guise of words also needs attention and "stabbing." I give a few of them: "enthused," "orates," "practitioner," "resurrected," "standpoint," "helpmeet," etc. Make sentences containing these words misused and require pupils to substitute the proper terms for them; then require them to use each of the words correctly in a sentence. A list of them upon the blackboard may serve a useful purpose. The teacher may re-

quire pupils to tell in writing how they are misused; to tell their proper meaning; to use them correctly.

II. EXERCISES IN DERIVATIONS. 1. Form new words by adding another word to each of the following: after, forth, oft, out, over, with.

2. Name three words which end with the suffix *hood.*

3. Change the following verbs to nouns: believe, strike, dig, speak, choose, live, breathe, lose, shove, spin, bake, build, beg, roll, give, divide, know.

4. Name ten words ending with the suffix *ment.*

5. Name five words which are used both as adjectives and nouns without any change of form.

6. By the addition of a syllable change the following nouns to adjectives: gold, gift, wax, wood, flax, fool, fear, sense, adventurer, cloud, grass, silver.

7. Change the following verbs to adjectives: pay, forget, exhaust, command, horrify, compose.

8. Change the following nouns to verbs: knee, muff, height, length, sermon.

9. Name four words which are either nouns or verbs according to the place of the accent as *con'trast, contrast'*.

REARRANGEMENTS. Contract the following sentences to simple ones: 1. Have you heard how the trial resulted? 2. I know no other way it which it can be done. 3. You asked me a question and I answered it. 4. It is probable that he took it with him. 5. He is ill and consequently unable to attend to it. 6. As there wasn't a quorum we had to adjourn. 7. He said that he was willing to return the money. 8. I have carried out the instructions which he gave me. 9. It was not not without some hesitation that I agreed to it. 10. He will be sorry when he hears that you have failed.

Change the compound sentences to complex, and *vice versa:*

1. You must do it, or I'll punish you. 2. He would have gone if his friends would have let him. 3. I wrote him a letter but he has not answered it. 4. As he was present at the time he must have seen it. 5. He was very ill but still he tried to finish it. 6. He has reason to fear the result but I have more reason. 7. I can prove that he took the money. 8. He would not go and I know the reason.

Arrange the following in as many ways as possible without changing the meaning:

1. Not always shall the slave uplift
   His heavy hands to heaven in vain.
2. The good man sat beside his door
   One sultry afternoon.
3. The robin, softly, o'er the lea.
   A farewell song is trilling.

WORDS FOR THE WORKERS.

DR. DUNTON tells us that a marked peculiarity of German teaching, as he heard it, was the obvious effort of the teacher to make his pupils able to do

their work without the aid of others. He might have added that when that ability has been gained these German children do their work without the aid of others.

IN the long run he is the best teacher of arithmetic, geography, grammar, reading, history — who knows most besides, outside of these special branches. Who are our best teachers to-day? The narrowly technical pedagogues? No, but those who have the most liberal education, the widest, broadest culture. They are the ones who rise most steadily in the profession. They are the ones who are coming rapidly to fill all the highest positions, simply because they are the most competent and best fitted for them.

WE know by our own experience that we pass by the store where we have been rudely treated, and walk several blocks to patronize a pleasant, cheerful man, who meets us with a kind word, and answers all our questions politely. Railroads and hotels can never estimate the damage that has been done them by surly clerks and snappish ticket agents. The surly, snappish teacher does his pupils untold harm. One who cannot always be a gentleman or a lady in intercourse with pupils ought not to teach another day.

PRESIDENT DWIGHT, in his account of his early education, says "that he can not help feeling that the great defect of the past and the present education lies in the want of personal and individual intercourse between the teacher and his pupil—immediate contact of the mind of the former with the mind of the latter —in such a degree as is to be desired for the pupil's highest inspiration. Our system of education, which has been growing in popularity of late in all our higher institutions of learning, places the student far too much in a kind of great machine, where his individuality is lost in the working of the machinery. It is the mind and the man which we need to develop, and to this end something more than text-books and examinations are necessary."

PROBLEMS IN ARITHMETIC.

1. If it cost $84 to carpet a room 36 ft. long and 21 ft. wide, what will it cost to carpet a room 33 ft. long and 27 ft. wide? Ans. $99.00

2. A clerk receiving a salary of $950 per annum, pays $275 a year for board, and $180 for clothing, and $150 for other expenses; what per cent. of his salary is left? Ans. 36 6-19 per cent.

3. What will it cost to dig a cellar 40 ft. long, 21 ft. 6 in. wide, and 4 ft. deep, at $1.75 a cubic yard? Ans. $22.96.

4. 2 pk. 3 qt. 1 1-5 pt. is what decimal part of 20 bu.? Ans. .030625.

5. What are the proceeds of the following note, discounted at bank, and when will it become due? (Interest being reckoned at 6 per cent.):—

$100. NEW YORK, Oct 11, 1875.

Ninety days from date, for value received, I promise to pay to the order of John Smith, One Hundred Dollars, at the Albany Bank.

6. A can mow 2 acres in 3 days, and B 5 acres in 6 days; in how many days can they both together mow 9 acres. Ans. 6 days.

7. How many bricks will be required to build a wall 2 rods long, 6 ft. high, and 18 in. thick, each brick being 8 in. long, 4 in. wide, and 2½ in. thick?

Ans. 6,416 bricks.

8. If the wages for 24 men for 4 days are $192, what will be the wages of 36 men for 3 days? Ans. $216.

9. At what rate per cent. will $311.50 amount to $337.40 in 1 yr. 4 mos.?

Ans. $6\frac{147}{623}$

10. A woman bought 6 silver spoons, each weighing 3 oz. 3 pwt. 8 gr., at $2.25 an oz., and a gold chain weighing 14 pwt., at $1.25 a pwt.; what was the total cost? Ans. $60.25.

—*Canada Educational Monthly.*

OUR BOOK TABLE.

AN ELEMENTARY COURSE IN PRACTICAL ZOOLOGY, by Buel P. Colton, Boston: D. C. Heath & Co., 185 pp., price 85c.

We commend this book warmly to the attention of science teachers in the high schools; for the anthor has in it presented in detail, with sufficient directions and aids, a scheme for making the study of zoology a means of proper scientific training. He is interested not simply with communicating knowledge; it is surprising, indeed, how successfully he avoids telling what the pupil can find out for himself; by this finding out for himself, for which full directions are given, it is expected that he will not only learn zoology in a more real and abiding way, but that he will also learn to observe closely, to describe accurately, to infer correctly. Thus the author is more concerned with training up the pupil to work for himself, to see for himself and to think for himself than with filling him full of names, descriptions and facts. He gives directions for studying thirty-two animals, beginning with insects.—it does not make much difference where you begin, and these are interesting, and are abundant in the fall of the year; after these he takes up the crayfish, earthworm, clam, snail, a few protozoans, a snake, a fish, a frog, a bird and a rabbit. The outfit necessary to do the work here described is inexpensive: the difficulty lies with making teachers and boards appreciate its value. They are wedded to book-study, and think the knowledge is the main thing, the training of little account. Consequently they will not readily give the time and conveniencies necessary for such work. The science teacher must have time to make ready for his class, and a room and tables for their work. We shall grow to this kind of teaching. We shall recognize its worth, now that such a school manual puts it in the power of ordinary teachers to do it properly.

—THE PARTS OF SPEECH AND HOW TO USE THEM, by Mrs. N. L. Knox-Heath, (Ginn & Co., 398 pp., price 70c.) is the long expected sequel to the same author's "How to Speak and Write Correctly." It is, like that familiar volume, ingenious, practical and full of happy devices. The plan is progressive, it aims

constantly at securing ability to use our language correctly, it furnishes sufficient rules and principles to guide and steady practice, and it makes the language work practically useful and instructive. The vocabulary lessons are especially deserving of attention, and the exercises with fables and poems. For most teachers it will be quite enough to know that the book is every whit as good as its predecessor.

—QUEER QUESTIONS AND READY REPLIES, by S. G. Oliphant (New England Publishing Co., 177 pp.) is a miscellaneous collection of curious and instructive information, a good deal of it out of the range of the ordinary reader, arranged in the form of question and answer, and made easily accessible by a good index.

—ADJUSTMENT OF THE COMPASS, TRANSIT AND LEVEL, by A. V. Lane, C. E. (Ginn & Co., 40 pp.) tells clearly, accurately and thoroughly how to usethese instruments, with reasons, in such a way that only a knowledge of elementary mathematics is necessary to understand it. It will be of service to practical surveyors and college students.

—LESSONS IN MATHEMATICAL GEOGRAPHY, with Introductory Exercises in Form, is a little pamphlet, of thirty-two pages, prepared by Prof. S. Y. Gillan, now of the Normal School in Milwaukee. It will be found very clear and simple in its presentation of the form and motions of the earth and the more elementary phenomena connected with them. The design of the author has been to adapt it to the wants of the upper form pupils in the district schools.

—FIRST WEEKS AT SCHOOL (Ginn & Co., 14 cts.) is a charming child's primer, with colored prints designed to furnish six or eight weeks' work for beginners.

—SECOND NATURAL HISTORY READER, by Rev. J. G. Wood, (Boston School Supply Co., 132 pp.) is carefully graduated to wants of young readers whom it seeks to interest in a simple but scientific study of the animals around them. Thus it turns to account the natural interest of children in these things and at once teaches them to read and observe.

—We have, from Ginn & Co. two new school music books, VEAZIE'S FOUR-PART SONG READER, for upper grades of boys' and mixed schools; and the NEW FIRST MUSIC READER, by L. W. Mason, for fifteen years supervisor of music in the Boston schools.

—The last issue in Ginn & Co.'s admirable series of Classics for Children is HANS ANDERSON'S FAIRY TALES, second series. The stories are carefully selected and edited to meet the needs of third reader pupils, and a more delightful and healthful book for them to read it would be hard to find.

No grace is more necessary to the Christian worker than fidelity; the humble grace that marches on in sunshine and storm when no banners are waving, and there is no music to cheer the weary feet.—*S. J. Nicholls.*

NEWS AND NOTES.

—The Rev. H. Rashdall, in the *English Historical Review* shows that the word University has been misunderstood. It has, in its origin, nothing to do with "universal knowledge" or "a collection of colleges." Its use was confined to the body of masters or scholars, duly recognized as such, residing in some town. Accordingly the earliest universities were guilds of masters and scholars, in precisely the same way as the trades guilds of the middle ages were associations of fellow craftsmen. To join the guild, the university, it was necessary to obtain the *licentia docendi*. This could only be obtained from the Chancellor,—an officer of position in the capitular body of some church. Hence it was from the churches that universities first sprung. After obtaining his license from the Chancellor, it was still necessary for the licentiate to be incepted, or received into the university of masters. He was introduced and recommended by the master under whom he had studied, a d required to give a lecture before the body into which he wished to enter. The incepted members of the body or University of teachers had all the teaching in their own hands, and it was impossible for a teacher to do without inception at the hands of his fellows. When he was incepted the licentiate became a master, or doctor, or professor, terms indifferently applied to those who had been incepted.

—State Superintendent Kiehle, of Minnesota, urges, as the first step towards the improvement of the elementary schools, the abolition of the district, and the adoption of the township plan of organization. The former multiplies offices, divides responsibility, makes proper supervision impossible, and ensures few and poor schools in districts only partially developed. It is, as suggested, the same as if each half dozen blocks in a large city supplied its own school. There is no equilization of burdens and privileges, and the standard of excellence is low. The township system would, it is estimated, require 2,500 instead of 15,000 school officers, reducing expense, increasing capability, and securing a more equable distribution of taxation.

—William Lant Carpenter, a distinguished English man of science, recently delivered an address on the position of science in the educational systems of the British Colonies. In it he says: "In reviewing the whole subject I have been very much struck with the fact that, in every colony, education is a distinct department of the State, under a responsible minister of public instruction, the teachers themselves being, in many instances, civil servants. Another noteworthy point is the obvious desire on the part of nearly every colony, to realize Prof, Huxley's aspirations for Great Britain, that the State should provide 'a ladder reaching from the gutter to the university, along which every child in the three Kingdoms shall have the chance of climbing so far as he is fit to go.' In most colonies, not excepting South Africa, this appears to be more or less the case. A State aided system of scholarships enables the boy in the primary schools to pass through the secondary and high schools, colleges, etc., and finally to study at the Colonial University."

—About English Grammar, this passage from the Life of Abraham Lincoln, now publishing in the *Century*, will prove instructive to some teachers:

"While working with Offutt Lincoln's mind was turned in the direction of English Grammar. From what he had heard of it he thought it a matter within his grasp, if he could fall in with the requisite machinery. Consulting with Menton Graham, the schoolmaster, in regard to it, and learning the whereabouts of a vagrant 'Kirkham's Grammar,' he sat off at once, and soon returned from a walk of a dozen miles with the coveted prize. He devoted himself to the study with that peculiar intensity of application which always remained his most valuable faculty, and soon knew all that can be known about it from the rules. He seemed surprised, as others have been, at the meagre dimensions of the science he had acquired, and the ease with which it yielded all there was of it to the student." Make a note of that for your own study and for future use.

—It would be difficult to put the argument in favor of a one mill school tax more forcibly than it is presented in Superintendent Kiehle's report, which is thus summarized by the *Pioneer Press*: "The distribution of burdens and benefits is now unequal and unjust. The country has an average of five and a half months of school, the city has nine. The average expenditure in the country, of $6 per scholar, requires a tax of from four and a half to seven mills; the city expenditure, of $7 to $14 per scholar, is met by a tax of from two to five mills. Those who get least pay most for it. There is no state aid, properly so-called, for common schools. The one mill tax is local. The state appropriation is but the distribution of a government fund. "The state is aiding by direct tax all departments of education — university, normal schools, high schools, reform school, institutions for deaf, blind and imbeciles — all, except the common schools, the schools of the people." It is a true arraignment. The districts do not get even the full value of their local tax. In all of them there is more or less railroad property. That property is exempted from taxation on consideration of a tax paid to the state on gross income; and the revenue from that tax, $600,000 annually, really contributed by the people of the whole state, is divided among the different departments of government, and different educational institutions, again excepting the common school. That gets not a dollar of it. The average school tax in cities like St. Paul and Minneapolis is about two mills per annum. In thinly settled counties it rises, so that Anoka pays as high as 22 mills and Big Stone as much as 33. Are not these people doing all they can do, and far more than we should be willing to do, when they pay from ten to twenty times our tax in support of education? And yet all that their supreme effort secures them is an average of five months of school, with low-salaried and therefore more or less inefficient instructors. The burden of these facts lends an irresistible weight to Prof. Kiehle's proposition that there should be a general state tax of one mill additional, to go into the common school fund."

—At the late elections thirty-five new county superintendents were chosen. There are sixty-nine superintendent districts in the State, (sixty-seven counties, Dane and Rock having each two superintendent districts.) Thus it appears that almost half of the county superintendents were changed. Let any candid person consider how serious a matter such an upheaval is to the educational interests of the State, and then decide whether it is not desirable to find some better method of organizing. The men who come in may be on the average as able and earnest as the

men who went out; but they have not their experience, and will spend one year at least in learning their field. Most of them have had no experience in school inspection, and dimly apprehend the superintendent's problems, which are learned only slowly and by long experience. Thus in some sort counties begin over again the work of training a superintendent; only in too many cases, to cast him off as soon as he acquires some skill. So we keep pulling up our plants just as they are ready to bear fruit.

—The Janesville high school, C. H. Keyes principal, has this year added one hundred and fifty dollars worth of books to the school library.

—The high school at Necedah, H. J. Bowell principal, has raised one hundred dollars for its library, and expects to increase the amount during the winter.

—In a geography recitation: *Pupil:* Connecticut, among other things, manufactures a great deal of tinware, and tin in sheets. *Teacher:* How is that? How are tin plates made? *Pupil:* Of rags. *Teacher:* What is sheet tin made of? *Pupil:* Why, of waste paper and old rags, paper rags.—How did the mistake come about?

—The National Educational Association will hold an educational exposition in connection with the meeting in Chicago next summer. The display will comprise a main exhibition and an annex. In the former will be grouped, 1, specimens of school work; 2, kindergarten work; 3, industrial exhibits; 4, art exhibits, and 5, miscellaneous; in the annex, 1, apparatus and supplies; 2, books; 3, furniture; 4, school architecture, including models, plans and elevations, and schemes for heating and ventilating, and 5, miscellaneous. States expecting to present exhibits are urged at once to commence the work of preparation. Shall Wisconsin make an exhibit? If so, work should be commenced at once, that the exhibit may be worthy of the State.

—Dr. Jowett, whose term as vice Chancellor of Oxford University (England) has just expired, signalized his administration by such changes as hardly have been witnessed before at this ancient seat of learning in a century. He has changed radically the system of examinations; has given scientific teaching an enormous impulse, helped forward by the formation of a new physiological laboratory; has permited the forming of a non-conformist college; and has startled the old fashioned element by his "radical ways" and his "unreverence." He is to be succeeded by Dr. Bellamy, who is spoken of as an extremely conservative man. Probably the excited "dons" will have an opportunity to adjust themselves to the new state of affairs during the new administration.

—In his report to the Board of Regents of the State University, President Bascom speaks as follows, and strong as the statements are we believe they are fully warranted by the facts: "In the last thirteen years the University has secured a steady growth. There are now very few institutions of higher education which equal it in the hold which it has on the State to which it belongs, in the number of collegiate students it receives from its own State, in the influence it exerts on intermediate instruction, and in its relation to the colleges of the State. It is constantly increasing its hold upon the high schools, and has now a large and influential list of accredited schools, which are shaping their courses of instruction in reference to it. It is also requiring, by way of preparation, all the work these schools are prepared to perform,

and is urging them to thorough and adequate instruction in the branches required. Thirteen years ago nearly one half of the students in the University were fitted in its own preparatory department. They are now all fitted, with the exception of a very small Greek class, in the schools of the State. In the meantime, the standard of admission has been raised as rapidly as the development of the high schools will allow. In breadth, variety and quality of instruction there are but few institutions in the country which surpass the University of Wisconsin." Certainly that is a very gratifying testimony to the development of high school instruction in this State during the past ten years. The truth is the University and the schools have grown together, and are helping each other, as they ought.

—The Janesville school-report, C. H. Keyes principal, shows an enrollment of 1,703 on a census of 3,982 children of school age, that is the enrollment is less than half the children of school age. The cost of tuition per pupil is $7.80. Of the training in teaching the report says: "The law now requires all free high schools to give instruction in the theory and art of teaching. This seems to be an especially wise provision for our city when we remember that ninety per cent. of all our teachers in the grades below the high school have received all their training in the city schools. Two terms of careful study are given to this subject in the senior year, supplemented by weeks of intelligent observation of the work of the experienced teachers who are in charge of the various departments of the Third district school. Following this comes four weeks of practical class work for each student under the eye of the department teacher, who helps by such suggestions and criticisms as seem needful. With the hearty co-operation of the teachers in the grades we ought to be able to fairly equip the student to intelligently begin work in the classroom." Turning to the graduates' calendar of the school we find that during the last three years thirty-eight have graduated from the school of whom twenty are reported as teachers.

—The training given to those who wish to become assistants in the kindergartens connected with the Milwaukee schools is thus outlined in a report to the city school board: "The work of this class was both practical and theoretical, the practical part including actual teaching or practice work in the several kindergartens of the city, to each of which one pupil of the class was assigned and placed in charge of about twenty children. The theoretical work was performed under the instruction of their director, consisting of analyses of the various occupations of the kindergarten, study of the songs and games, methods of teaching form and color, exercises in the relation of stories, to gain the power of presenting common subjects in a form interesting to the child, blackboard sketching, and a study of the general aims and principles of the kindergarten system."

—Supt. Howland, of Chicago, takes strong ground against the use of physical force in the government of the city schools. He declares that no teacher is justified in laying hands upon a pupil in any way whatever; and that when a teacher takes a boy by the collar or the arm, or lays a menacing hand on his shoulder, he (the superintendent) "could not blame the boy much if he strikes back."

—Supt. Howland also takes a decided stand against the daily marking of recitations below the high school. He thought it might be well for the princi-

pal and teacher to keep some sort of a tabular statement of the standing of each pupil for their own convenience, but not for reporting to the parents or the pupils.

—At West Point, Columbia County, the teacher of one of the town schools insisted that while the Bible was being read in the morning the scholars must listen in silence and not study. Sixteen of the Catholic students refused to abide by the order and during the Bible reading employed themselves in study. The students were thereupon suspended and the school board sustained the position of the teacher. The scholars swore out a writ of mandamus compelling the board to reinstate them. One of the students then brought suit for $100 damages against the board, and the case was tried in justice court. A decision was rendered in favor of the board, but it is understood that the case will be appealed.

—Ripon College has just received $10,000 from the estate of Mrs. Helen C. Knowles, late of Worcester, Mass. This, with $10,000 previously paid for the same object, is to constitute the endowment of the President's chair.

—The State school at Sparta has as yet but two or three pupils. Some county officers have written to ascertain whether more than two pupils can not be sent from their district. As soon as the counties are heard from an apportionment will be made, and the counties permitted to send more than two apiece.

—A. S. Tibbits, a graduate of the University of Michigan, is in charge of the schools at Clinton.

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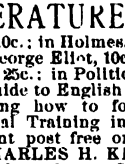

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RELIGION AND THE PUBLIC SCHOOLS.

Address before the Wisconsin Teachers' Association December 27, 1886.

It is hardly to be expected that one who should stop amid the busy hum of active life, and, side-tracking the ordinary current of his thoughts, attempt to address an intelligent audience upon a theme so important, so profound, so encyclopedical in its range, as religion and the public schools, should more than brush the surface of a subject, which offers an inviting field for the concentrated thought of many lives and generations of men, or more than note some of its more salient features, as one may catch the impress of a landscape from out the car windows of a rapid train.

Let therefore, the greatness of our theme be the measure of your indulgent patience, as some of its more prominent aspects pass us in quick review.

Our subject will recast itself into the question,—what relations exist between the religious and the intellectual training of mankind? and will suggest the following simple analysis: What are the elements in a child's life which need to be trained? Who is responsible for their training? How is it possible under present conditions to obtain the best results?

How shall we tell what is, except in terms which tell us what it may become? It is a bundle of possibilities, unmeasured and immeasurable, a germ containing the promise and potency of the most varied and splendid forms of life. The strength of a Hercules is latent in its baby

frame, the grace of an Adonis, or the beauty of a Venus are veiled beneath the softness of its baby-hood.

Hidden, too, beneath that infantile unconsciousness is a new personality of intellect, waiting to start on its journey through the phenomena of life, capable of unfolding, in quick response to its environments, its dormant powers of observation and thought and promising, if unrestrained by the blunders of his friends, or the conventionalties of its surroundings, to enkindle its own torch of genius, until a new name is added to the pantheon of fame.

Again, within that little chrysalis of flesh and blood lie stored away the diviner forces of the soul, the affections, the emotions, the conscience and the will, yielding the double possibility of saint or fiend, as the plastic nature of the child is moulded by the contamination of brutality and vice, or expands in the more genial atmosphere of righteousness and love.

Such, then, in brief, is the wonderous range of possibility to which every child with the varying limitations of heritage is born, Truth, beauty and goodness are its birth-right.

To grow into the knowledge of the truth, to know things as God knows them, by the clear sunlight of reality, to unfold into goodness as a nature and not a conformity, to make its radiant virtues the normal expression of a life, not in a world of chance, but in the household of God, and to enshrine the gifts of the intellect and the graces of the soul in the most perfect drapery of the beauty of physique, such are the rights of every new-born child, in this human kingdom of God.

These best results of life, however, do not yield themselves spontaneously by the natural evolution of the faculties, but only in response to careful, intelligent, systematic training in obedience to the laws which govern each department of the natural order, physical, moral, intellectual, after the analogy of nature,—"first the blade, then the ear, after that the full corn in the ear."

Who is to enter upon the delicate and complicated task of bringing each new life to the rich fruitage of its maturity? There is no one in the world responsibile for this duty but the parents who gave existence to the child. Responsible they are directly to the child for its future health and happiness, for its intelligence and virtue, for the saving or the ruin of its life; responsible to the community for the integrity and usefulness of the citizen that is to be; responsible to future ages for the

sending down of saints and sages upon the rushing river of time and responsible to God for their sacred stewardship over a tender branch, plucked off from the stem of the Infinite.

And, oh! I bid you think of the universal wail that goes up, with voices of unutterable woe, hidden from the dullness of our mortal ears, at the world-wide slaughter of the innocents, by reason of the ignorance, the incompetence and the neglect of the great majority of the parents of mankind.

The wonder is, not that the multitude is doomed to blunder through life with a weak physique, an undeveloped conscience and an ill-regulated mind, but that any, stirred by the surging forces of the soul, break from the slavery of environment and, becoming to their fellow-men voices crying in the wilderness, lead the way up the steep declivities of hope towards the bright mountain tops, which rise above the clouds, serene and glorious, bathed in the brigh sunlight of idealities of life.

Responsibilty is, in itself, an education, and, though, for a thousand generations it may rest lightly upon the minds of men, its pressure is cumulative in effect, and in the long tutelage of mankind it will sink deeper and deeper into the universal conscience, until what was once the irksomeness of duty will unfold, at lest, into the enthusiasm of a grand devotion. But, if any external agencies shall offer to lift from the shoulders of men the duties which, in the divine economy, have fallen to their lot, they do but interfere with the education of the race and delay the coming of the golden age of a complete human maturity.

We are told that the lengthening of the period of infancy has been one of the chief agents in the development of man and that out of the domestic virtues and the double responsibilities of parent-hood have come the arts and sciences, the laws and all the civilization of mankind.

Surely, then, the future progress and happiness of the race depend upon the future development of the consciousness of parental responsibility, until the time shall come when it will be esteemed a crime that children should grow up with coarse, misshapen, ill-adapted frames, that they should ever go astray from the paths of virtue, or that they should arrive at man's estate without a fair judgment and an intelligent interest in the greater concerns of the world.

The first duty which falls to the lot of parents is that of rearing a magnificient human animal. Nor may we expect the most splendid achievements of the human race until all the parents of mankind are

able to see through the dull clouds which obscure the bright vision of the possibilities of life and become enthusiastic to lay, in the grace and vigor of the physical frame, the solid foundation which may sustain the more splendid superstructure of a developed heart and a cultivated mind.

We go into the splendid halls of the Vatican and see in the glorious Apollo the graceful contour of a divine physique, conscious that every lineament of a perfect form is a veritable sacrament, an outward and visible sign of an inward and spiritual grace.

Why does the Apollo exist only in marble? We ought to have a world full of Apollos, and surely the Greek dream of beauty is but a prophecy of a brighter age to come, when life itself and its developments instead of its sensuous satisfactions will become the passion of mankind. What a foundation we should have to build upon for brightness of intellect and grace of heart, if in every boy we saw a young Apollo, and in every girl the promise of a new Venus of Milo.

Surely to the parents belong the privilege and duty of laying this foundation of excellence in their childrens' lives.

The moral nature is next in order. The child learns to love before it learns to talk. It has begun to know right from wrong, and become conscious of a conscience before it can add two and two, or distinguish A from B. To be under the guidance of love and conscience is to have true religion. As soon as any human faculty displays itself it is time to begin to cultivate it, and the place for laying the foundation of the religious life as well as that of a sound physique is in the nursery.

It will be a bright day for the world when it comes to be universally realized that religion is not a matter of the intellect, but of the affections and the conscience as the guides and mentor of the will. The world is still suffering from the vast shadows cast by the scholastic philosophy, under whose benumbing influence it came to be believed that religion was a matter of definitions and consisted chiefly in holding right views about a variety of things.

Protestantism has not escaped altogether from the dominion of the scholastic philosophy; but, instead of returning to the simplicity and power of true religion often presents the spectacle of simply offering another set of views as more correct, and of measuring a man's religion by his supposed orthodoxy as to certain questions.

In escaping gradually from the grip of the mediaeval nightmare, the

christian world will learn to appreciate the fact that religion is light, love, righteousness, joy and peace in a divine household, and so reach the natural solution of many questions which now perplex the public mind.

Religion will always seek in theology its appropriate drapery of thought, which drapery will change its fashion in the future as in the past, in accordance with the natural evolution of the human mind. It will always seek, in a ritual of worship, an expression of the faith and devotion of the heart. But the outward drapery is not the thing which is draped, nor the outward expression the thing which expresses itself. Religion is of the heart, the growing love of our Father and our brethren as the supreme motive power in life. It grows only by contact and contagion, as the leaven works in the meal, as light dissipates the darkness, or as the sunshine and the rain awaken the forces of the buried grain.

The moral nature of the child, unfolding amid the genial atmosphere of a truly christian home, ought to acquire a healthy growth before it comes beneath the larger influence of the larger household of the faith, strong in the developed love of the things that are pure and lovely, merciful and just, unselfish and of good report.

But there is yet another field in the child's unfolding life: its intellectual nature, its powers of perceiving, comparing, classifying, analyzing and judging. Early in life do these powers begin to make themselves felt and happy is the child whose natural guardians know how to guide them aright.

The nursery is again the proper sphere for the child's intellectual culture. Here it begins to learn about the relations and proportions of things, the difference between light and shade, hardness and softness, squarness and roundness, ductility and density, which are all intellectual preceptions. It is studying applied geometry in learning to walk and, if blessed with intelligent parents, learns grammar after a better fashion than can be put into books, and with an excellence that can be detected down to the last of its days.

No one presumes to doubt that all this training, physical, moral and intellectual, is a duty which naturally falls to the lot of the parents up to a certain and undefined age of the child. The question is, does the duty ever cease until the age of manhood and womanhood fit the full-grown child to leave the parental nest.

But few will venture to argue that the parental duty ever ceases,

while all will recognize the fact, that after the preliminary training of the home, other agencies offer themselves, with an equipment for results which, in the home, is necessarily lacking and that to these may be delegated the task of further culture, while to the parents there still remains the duty of ascertaining how well the work is done.

The church and the school exist for the purposes of this larger culture, the one offering a religious atmosphere wherein the soul, needing the environment of faith, hope and love, may grow in grace and in the knowledge of God, the other supplying the curriculum, evolved from generations of experience, adapted for the better furnishing of the mind. These two, the church and the school, are utterly distinct, the one from the other, in their spheres, their methods and the results at which they aim. The one deals with him as an intellectual being. Both are necessary and neither would presume to encroach upon the domain of the other but for our sad inheritance of confusion from the darker ages of the past.

We need not go farther back than the days of the Reformation and the Renaissance to realize that both Protestant and Catholic seized upon the newly established schools as ready instruments for building, in the youthful mind, bulwarks of theology as protections against the insidious encroachments of error.

Amid the brutalities and immoralities of life which characterized the long dominion of the mediaeval darkness the world had practically lost the realization that righteousness was the measure and end of religion. Nor did the Reformation, which, for the majority of men, was a reformation in theology and not in life, rectify the blunders which assumed that a correct theology was the safest passport to the mansions of the blest. Ever since those stormy times which witnessed the disruption of Christendom, zeal for the world's salvation has often been beguiled and transformed into zeal for the growth and glory of church, or sect, or party and the clerical heart, regarding the school as its lawful domain, has never yet quite awakened from its dream of enlarging ecclesiastical dominion, through the shaping of the youthful mind.

So long as the state was subservient to the church, or the church the creation of the state, the schools, from lowest to highest, were seminaries and propaganda of the beliefs of the party in power, and, as theology was adapted to the lesser knowledge of the past, the increasing light of the world was carefully excluded from the schools, piercing

only surreptitiously through the cracks of inquiring minds and then under the suspicious name of heresy.

From force of circumstances this country was compelled to cut the Gordian knot of an ancient dilemma and declare that church and state should be forever distinct, independent and free. Had there been no common danger, forcing the separate colonies of the Atlantic coast, first to act together and then to draw within the closer bonds of a federation we should have had to-day, instead of a great, free nation, a number of independent States, each with its own state church, a Puritan New England, a Dutch Reformed New York, an Anglican Virginia and a Roman Catholic Maryland. Little did those colonies think, when they rose to resent aggression from across the sea, that they were to solve one of the greatest problems in the polity of nations and decree, throughout the broad area of a continental domain, the absolute divorce of the things which had been joined together since the days of Constantine. Yet it is a most magnificent heritage from the fathers of the land, this absoluteness of religious liberty, and has brought to us the times which the prophets and saints of the ages have been praying for, in which each man might worship God according to the dictates of his conscience, with no one to molest or make afraid; and it is a blessing which we may be sure the American people will never allow to be trifled with.

Escaping the guidance of a paternalism in religion we are slowly adapting ourselves to the conditions of religious liberty and learning the new lesson that man's moral and religious life can never be the result of legislation, coercion, machinery, or even directly of instruction, but is always the result of a new set of affections, growing chiefly by the magnetic attraction of a righteous example. The law may require conformity to a standard and enforce obedience to a code, but it cannot make a man love the things that are pure and true and honest and of good report. And, again, if a religion be true, truth by the witness of the ages, has always shown its ability to take care of itself in this world and needs none of the stimulants, artifices or barricades which those who only halt believe it would supply in its support.

Religion never had so magnificent an opportunity as in this country to-day. No one may interfere with its free growth; no one may impose it upon the conscience of another, and, that it needs no artificial props, the thousands of churches and hundreds of missions built and sustained by the impulses of a free conscience, abundantly prove. These churches

are the training schools for the moral and religious life. They offer themselves to the parents of this land as the gardens of God, in which the lessons and examples of Christian homes are enlarged and intensified and in which faithful people are ever ready do what they can to remedy the defects of homes that are not Christian.

But it is the duty of every parent having received the stewardship of a child, to see to it that every part of that child's nature receives its proper training, and, though parents may be themselves without religion, they have no more right to starve the religious nature of a child then being themselves unable to read and write, they have a right to deny the child the benefits of a common school education; but they are in duty bound, examining the more prominent churches and sects within their reach, determining, so far as they may, which seems to show the best results in the lives of its members, judging it not by its professions but by its fruits, to say to that church or sect: Take this child and do for it what I cannot do, awaken its conscience, cultivate its heart and lead it in the way of righteousness.

In proportion as parents may recognize this parental duty, realizing the totally distinct spheres which church and school occupy in developing the nature of a child, all points of friction between church and school will disappear.

It does not fall within our province to discuss the question whether the schools ought to be the result of private enterprise on the part of the parents, in obedience to parental instinct, or whether they ought to be public, common and free. In this country the same consensus of the people, by which church and state have been divorced, has decreed that, as regards the fundamental branches of knowledge, each community shall discharge the duties of a larger paternalism. We recognize the fact that better results are attainable by concentrated action and by the system which profits by the lessons of a wide experience than would be possible to the irregular action of private enterprise. The common schools are the pride of the land and they are here to stay, providing for every child a training in such simple branches of knowledge as are fundamental to any possible usefulness in life. They deal with an entirely distinct part of the child's nature from that with which the church has to do, having for their definite and only object the opening of the windows of the mind.

On general principles, therefore, religion and the schools have noth-

ing whatsoever to do with one another and, furthermore, in this country, their domains are separated by the law of the land.

Here we have to adapt ourselves to an entirely new status. In other countries the schools have been instruments of the church for teaching the doctrines of theology first and the elements of a primary education as a secondary matter. In this country the schools are established, not by the church, but by the community, which, though it may be very religious, has itself no established religion.

Being divided in its interpretation of religious truth into various churches and sects, each one of these enjoys equal rights with all the rest, while none may presume to encroach upon the common domain, assuming to be the church or to interpret the faith of the American people.

And, why should they? Have not the churches more than enough to do in cultivating the faith and morals of such as each may attract within the sphere of its influence, without seeking to cast the ægis of their protection over the alphabet and multiplication table? They cannot alter these ancient institutions of the human race, or by any possible device, make them media of religious training. There is no Catholic alphabet as distinct from a Protestant alphabet. There is even no such thing as a Christian arithmetic. We have borrowed it from the Arabs and geometry from the Pagan Greeks. Since the church finally yielded to the discoveries of Magellan and others, there has been no such thing as a Christian geography, as distinct from the facts in the case, nor do these branches of knowledge exist in any sectarian recensions. What folly, then, for the churches to attempt to interfere with the imparting of them to the youthful mind. Ah! but the cry is, we must teach the children,—what? theology. The few simple statements of truth which a child ought to know and believe, may all be learned in a few hours and do not need to occupy the time which belongs to the school. But the churches are all so busy, each with its own favorite theology, that they are always in danger of forgetting about religion. Theology is the human definitions. It is always breaking its fetters and, be it never so profound, religion is better. The intellectual statements of religious truth will come in due course as the unfolding mind seeks expression for the faiths of the heart, but the religious world has busied itself altogether too much in arranging the drapery, which too often covers an empty shrine. Let it attend to the shrine, awakening in

the youthful heart the love of virtue and the impulses to righteousness, as fed and stimulated by the life of the Son of Man, and reflected in the lives of his true disciples. This kind comes not out of books, but only by the contagion of example after the original prescription for the propagation of Christianity. Let your light so shine before men that they may see your good works and glorify your Father which is in Heaven! When the religious world is more truly religious, it will devote itself to the youthful heart and, leaving the higher truth to defend itself, cease its efforts to prejudice the youthful mind and so abandon all attempts to do what it cannot do through the schools.

Whether people are satisfied or not, the fact is established that the common schools, in this country, are not to be used except for the definite purpose of secular education. Yet, owing to the force of habit and tradition, some, not quite content with the new status, are making valiant efforts to re-establish a condition of things that has had its day.

Churches, all over the land, are encouraging the dangerous experiment of establishing church schools, in which the ordinary furnishing of the mind is diluted by an admixture of their favorite opinions. This proceeding is dangerous, because it is so totally un-American. The children of this land are to grow up and live together, work together, think together, vote together and together help to solve the problems of American civilization. It is, therefore, a crime to posterity that they should be educated apart and that the prejudices of race or religion should thereby be intensified. A Christendom divided by the blunderings of past ages is not the ideal to be perpetuated on the American continent, and, for the sake of the American nation, as it will be when this vast multitude of many kindreds and tongues shall have been welded into one great people, aye, for the sake of the Kingdom of God therein, we owe to the generations that shall come after us the broadest possible culture of both heart and mind.

It is this very breadth which must be lacking in a church school, since it is established for the express purpose of imparting a narrow and not a broad culture and, because the forming of opinions is its primary object, it follows that the very things for which a school ought to exist will be secondary, and, therefore, that its scholarship will inevitably fall below that of the public schools.

If parents are willing, through the authority, or by reason of the specious arguments of any church, to deprive their children of the benefits

of a public school education, they are doing the children a grievous wrong; but, so long as they plead conscience in the matter, there is nothing in the land which will stop the mischief, but the slow education of public opinion in the right direction.

After making deductions for the inroads made by the church schools there is still an immense multitude of children left to attend the public schools.

It is agreed that there can be in them no sectarian influence; yet, out of deference to the old dominion of the church over secular education, and before a great increase of population complicated the problems of American life, it was taken for granted that the school should be opened in the morning by the reading of the bible and prayer. But now comes the Roman Catholic and says that the Protestant bible is a mistranslation; the Jew, and claims that the New Testament is an impertinence, and the modern fool, who hath said in his heart there is no God, with the pretence that all religion is a delusion. These all claim that in having the Protestant bible, including the New Testament, read in the schools, we are practically re-establishing a state-religion and using the the taxation of the many to impose upon the conscience of the few. Their objection is perfectly valid. The community has agreed that all should be taxed, that the children of all might have the benefit of a free common school education, but the community not being agreed upon any one form of religion, and there being no religion of the State, there is no more reason why the bible should be read in the schools then why the koran should be read in them.

But aside from these considerations, what possible benefit is supposed to be derived from the mechanical, perfunctory, routine reading of a few verses of the bible at the opening of the school? Does talismanic virtue reside in the text, or is it as true as ever that the letter killeth, while only the Spirit giveth life? and does any one imagine that the children gathered in a school-room are in a state of spiritual receptivity?

The children should most certainly read the bible and have it explained to them, and be taught to draw from it the water of life, but, if the home and church are not doing their proper work, surely the ten minutes perfunctory and often irreverent reading of the bible in school will not remedy the defect. The same is true of prayer. It is eminently fitting that every important act of our daily lives should be prefaced by prayer, provided, naturally, that the prayer be genuine and not a vain

repetition after the manner of the heathen,—the finite spirit reaching out towards the Infinite Spirit; asking for wisdom and strength, and in no place is it more fitting than at the opening session of a school. But in schools like our own, set free from the dictation of a state church, there is no one to determine of what sort the prayer might be. It might be Christian prayer, or Christian prayer with the addition of petitions to the Virgin Mary and a galaxy of saints, or Jewish prayer with all Christian elements omitted, or it might be, with a Mongolian majority in some American town, prayer to Buddha. Under these circumstances objections would naturally be raised that the majority was imposing upon the conscience of the few, and there is no way to solve the dilemma in schools supported by general taxation, but to omit the prayer altogether. So, then, we have and must have, in this country, what some are pleased to criticise, under the epithet of godless schools; yet, but for traditions, both criticism and opposition would be disarmed. They exist for a definite purpose and they do their work admirably well. Inasmuch as all religious training, even by implication, is excluded from them, they will emphasize all the more strongly the parental duty of home training in religion, and enlarge the activities of the churches in supporting a more complete religious environment for the children of the land.

Our conclusions, then, from our rapid review of this most interesting problem, are such simple ones as seem to flow naturally from life and its conditions. The parents owe to the child the best possible culture of all its powers, physical, spiritual and mental. Much of the training in each part of the child's complex nature must be left to the intelligence and devotion of home. As aids in the spiritual and mental development the church and the school offer their services. It is the duty of parents to see to it that both church and school are well equipped for their work.

In proportion as the school progresses in the excellence of its methods, and the church grows in the power and beauty of its spiritual life, all questions at issue between religion and the public schools will fade away in the dim recollection of a once troubled dream, while we shall have learned the lesson of the ages in rendering unto Cæsar the things that are Cæsar's and unto God the things that are God's.

Charles Lester.

MILWAUKEE, WIS.

SCIENCE TEACHING IN HIGH SCHOOLS.

Report for the JOURNAL by Prof. H. D. Maxon, of Remarks of Prof A. E. Birge in the Wisconsin Teachers' Association.

The difference between information and disciplinary studies is obvious and generally understood. The former are pursued for the knowledge as an end in itself; the latter, for the discipline involved in reaching that end. The question with us now is not whether science may be profitably taught in a high school course as an information study, but how it may be advanced from this rank to that of a disciplinary study. By science teaching in this more advanced sense, we mean the presentation of a subject in such a way that the pupil may first see the phenomena and then reach, by means of the phenomena, the principles underlying them. This work excludes mere training of the eye and hand. It is the mental training that is kept in view, not the physical. The phenomena are to be so presented that the student shall see facts for himself, instead of giving mere text-book work. He must reach through the facts to the reason that underlies them. Facts without ideas are bread without salt, and equally unpalatable. In a high school curriculum, these facts must be relatively simple and obvious. The student's mind must not be absorbed in getting at the facts so as to leave no strength for discovering the principle that lies behind it. This rule would exclude the teaching of subjects involving, for instance, the handling of such instruments as the compound microscope. Whenever it is possible to secure a specialist for the direction of such work, it may be profitable; but under less favorable conditions, such as usually prevail, the pupil's power would be wholly absorbed in the mere manipulation of the instrument. If the pupil is to read from the book of nature, the book must be plainly printed. In the second place, not only must the facts be obvious but their meaning must be pretty clear and readily obtained. The phenomena of nature often have an apparent meaning which is not the real one. The experiment may be new and brilliant, and so occupy the pupil's mind that he fails entirely to get anything beneath the experiment.

In the third place, the material to be used must be easily procured; the studies, capable of being pursued without elaborate appliances or separate rooms for work.

Three sciences fulfil these conditions especially well. First, one of the sciences of matter,—physics, or as formerly called, natural philoso-

phy. Only so much of this branch is feasible as does not involve advanced mathematics. Within this limit, the study is fundamental, the apparatus very easily obtained, and the laws most readily determined.

Secondly, we should take one science of the world. It is not easy to give it a satisfactory name. It lies between physiography and what is ordinarily called geology. We might, perhaps, call it surface geology. It would include erosion and the other forces at work in producing relief forms. We might go farther and study something of the nature of exposed rocks. Most localities in this State contain sandstone ledges that could be used in this way. Advanced geology, as involving chemistry and astronomy, must be excluded.

In the third place, I would add one of the sciences of life,—botany, morphological and descriptive. Ordinarily too much is done in the systematic, too little in the morphological line. Botany too frequently consists, on the morphological side, mainly in learning Gray's Manual, and thus becomes a mere information study. Another common error consists in devoting the time to the identification of plants and preparing herbariums. This is the wrong direction for high school work. Systematic zoology or botany is profitable only when a very large amount of work can be done, when the pupil has an opportunity to handle many species. A small amount of systematic work is almost entirely useless, since no clear ideas of classification are secured. The time ordinarily given to herbariums could much better be devoted to morphology,—comparative morphology. Botany offers relatively easy microscopical work with the vegetable cell, if work is to be done with the compound microscope.

These three branches, physics, physiography and botany are preeminently suited for promotion from the information to the disciplinary rank. Chemistry is not suited for this purpose. Its laws are too remote. Any scientific study of these laws is beyond the range of high school work. It is clearly one of the advanced sciences. Zoology, too, is not as well suited as botany for our purposes. One reason is that the requisite material is more difficult to get. The common directions given in outlines of elementary work in this branch begin with, "Take an amoeba." But the amoeba is not always a particularly easy animal to take. You can frequently get it when you do not want it, but not always when you do. The same is true of other animals needed. They are not so easy to obtain as plants. Even the cat is not always avail-

able on a particular day. The material, too, is not only more difficult to get, but also more difficult to handle. The apparatus in the line of dissecting instruments is more expensive, and a separate place, required for the experiments. Again, the manipulation of the material is more difficult, and the ideas reached by the pupils are disproportionately few in comparison with the work expended. Geology and physiology can not well be taught scientifically in a high school course, as they are based on chemistry and zoology. Physiology should be introduced only to the extent of furnishing a sufficient basis of knowledge for the instruction in hygiene. Those portions of physiology which involve principles of physics, as for instance the action of the bones, may be dealt with scientifically, but with pupils of the grade in question, chemical facts must be taken on trust. As a whole, then, the study cannot be advanced from the information to the disciplinary stage.

Astronomy, too, must remain in the information list. Its facts are too remote for scientific use by high school pupils. Few high schools, moreover, can have the necessary equipment.

Physics, physiology, and botany, then, may be promoted to the disciplinary stage. This advance should be made. The colleges and universities moved in this direction first. The high schools should now take up the movement. They should open the book of nature as well as that of literature and language.

There are three special difficulties in the way. First is the matter of time. If teachers are persuaded of the necessity for the change, they will somehow find the time. If not, they will not. Little can be done to aid them here from the outside. Second is the difficulty of securing teachers able to do this work. There is involved in it a very considerable advance in methods. The difficulty is not a small one. Science teaching is perhaps the most difficult part of the teacher's work. Testing results counts for little here. The teacher must come into direct contact with the mind of the pupil. Ordinary class work, recitation work, entirely fails the teacher here. One thing, however, can be done. If the teachers of the State feel that there is need, it is the duty of the central authority to see to it that these teachers have the "know how" given them. Schools might be established in summer for four or five weeks, not for teaching science but for teaching methods of teaching science. The University students doubtless experience more difficulty in this line than Normal school students. The former are as a rule

much better prepared to take charge of a college than a high school class. The ability to conduct an experimental course in science should be made a prescribed qualification of certificates for high school teaching.

A third difficulty is in getting money for the apparatus. I have not much confidence in home-made apparatus for high school teaching. It takes a great deal of the teacher's time to make it. The "gotten up" apparatus costs more in the time expended and works much less satisfactorily than that made by regular manufacturers. Perhaps it is true that pupils enjoy the failure of an experiment almost as keenly as its successful performance, but the failure is not so enjoyable for the teacher. The advanced student and professor can work with picked up apparatus much more successfully than the high school pupil and teacher. In elementary work, the apparatus must work with great precision or the experiment is worthless. This fact necessitates an expenditure of money. It is placing too great a burden upon the teacher to demand that by his personal efforts he shall overcome the inertia of school officers in this matter. Teachers push their petitions year after year and naturally get tired and discouraged. It is unreasonable to impose this task upon them. It would be well if a system were established, similar to that of England, by which the State should, under proper conditions, extend aid to the high schools for the purchase of apparatus as it does now for their general support. The burden should not be entirely assumed by the central authority, but it may properly be shared. Doubtless the high schools of this State would have eventually reached their present position without State aid, but their progress has been greatly accelerated by that aid. The State can do a similar service in the matter of obtaining apparatus.

The campaign for introducing scientific teaching into the high schools is not to be short or easy. It involves almost a revolution in methods. Until we teachers, the pupils, and the community come to appreciate the importance of this work, the undertaking is going to be difficult. If for the next ten years we could do in this direction something like what we have done during the last ten for the high school system as a whole, a great success would be reached; but it is to be no holiday effort. It is rather to be an advance gained by slow and untiring work.

EVERY man's ability may be strengthened or increased by culture.

NOTES OF A VACATION RAMBLE—VI. THE CITY OF THE SAINTS.

To one who has just traversed the barren highlands of Nevada, the green meadow lands and orchards to the east of the Great Salt Lake wear a look of surpassing beauty. The first glimpse of the lake comes in the early morning—a black expanse of waters with an edge of brown mountains, lying in a sink or basin of the grey alkaline plains. How black, and still, and dead it is, a fit companion of the wastes! It softens to a blue as the sun mounts higher, and the train swinging around the northern end brings in view the flourishing city of Ogden. Here the Rio Grande road joins the Pacific, and eight car-loads of merry picknickers are made up for Garfield Park, a bathing place on the shores of the lake and half way to the Mormon metropolis. This, as is well-known, is not situated upon the lake, which indeed cannot be seen from the city. It lies instead at the foot of the mountains, from which it spreads out over the plains, a city of broad avenues with branching shade trees, and beautiful residences in spacious yards of green turf and flowers. When, in 1847, under the lead of Brigham Young, the weary band of Mormon emigrants emerged from the mountain gorges, and saw this vast plain or basin spread out before them, its slopes, covered with grey green sage brush, converging to the sparkling lake, it is easy to understand the joyous credulity with which they received the announcement of their leader that here the Lord commanded to pitch His tabernacle. Almost forty years have elapsed, and in it the little band has grown into a great people; the wilderness has been made to blossom as a rose; a great city of more than thirty thousand people stands where they pitched their tents, and hundreds of sister towns and cities look up to it with reverence almost equal to that with which the Mohammedan regards his sacred Mecca; and at the same time that isolation, which sheltered them in the day of their weakness, has disappeared, and the church to-day stands face to face with a mighty and indignant nation.

At the head of the main street are the great ecclesiastical establishments. Chief of these is the temple enclosure of ten acres on the west side, round which a massive adobe wall twelve feet high was early constructed. It includes four important buildings, the Endowment House, the Tabernacle, the Assembly Hall and the Temple. The Endowment House

is the oldest, and is a plain, two-story adobe building, in appearance only a comfortable residence. Here are celebrated the mysteries of the faith, the baptism, initiation and marriage. To all the other buildings visitors are freely admitted, but your courteous guide tells you quietly, "There is nothing there which you would care to see." One is therefore compelled to accept the account of it furnished by apostates from the faith, and to believe that, in the plain rooms of this very plain building, are celebrated, under the name of religious mysteries, crude and gross rites representing the creation, the counsels of Diety and the redemption of man, leading up to formal reception into the church and the marriages which defy the laws of the land.

The tabernacle has been often described. Its unique form was almost an inspiration, as exemplifying in brick and mortar the appearance of a new faith. Imagine a huge elliptical dome mounted upon stone pillars twenty feet high, within which the enclosing brick wall is built. Outer doors are placed all around, so that the immense audience of twelve thousand can pass out in two minutes and without confusion. Still more remarkable are its acoustic properties. In one end are the pulpit and reading desk, with seats for the president, counselors, apostles and elders; and behind these the choir-loft, where four hundred singers are accommodated. The guide stands in the desk and I under the huge gallery at the opposite end, and we converse in ordinary tones and without effort. There seems to be no echo even in the empty building to confuse our speech. He lets a tack fall upon the desk, and I hear it, sharp and distinct as though it were at my elbow. "We have architects among us," he remarks with pardonable pride. We sit on the platform in the presence of that vast amphitheatre of seats sloping down towards us, eloquent witnesses of the multitudes who gather here, and we talk of Mormonism. Here is the hymn book, with the old hymns we have listened to from infancy—hymns of Watts and Doddridge and Cowper. On the desk is the bible, "Our guide as well as yours," he says. "But you claim to have other revelations, do you not?" "Why not? Is man shut off from God in these days?" "But how do you know that your messages are inspired?" "Just as you do that the bible is, by the nature of the message and its attendant circumstances." "What is to hinder me from proclaiming that I have a message from God? Will you believe me if I do?" "Probably not: we are not superstitious. We should enquire as to your life and character; we should

examine the message. God has established a channel of communication in the organization of his church, and it is to be presumed that he will choose to speak through this; therefore we should be slow to credit you." It is surprising how sparingly the leaders have made use of revelations—Smith claimed several after that of the Book of Mormon; Brigham Young, three I believe; Taylor, one. Even in these times of persecution the lips of the revelator are not unsealed. It is a power which will be wasted by much using. "God's providence," said my interlocutor, "is a further proof of the genuineness of our revelations. When this church was assailed in the east He led her out into the wilderness; and when again, in Buchanan's administration, her enemies were ready to strike her, He brought on the civil war, and for a quarter of a century shielded her by causing confusion and strife among her adversaries." Each of us, I thought, interprets the universe from his own standpoint, and we only discover how narrow our own view is by listening to the exposition of our neighbor's. Of the present persecutions he said: "They will purge out our dross;" and of poylgamy, "We must obey God rather than man." He opposed public schools as godless, and said we are not justified in leaving out, in the training of children, the most vital of all interests. To the suggestion that we might teach only such religion as is common to all faiths he replied, "The church is of divine appointment, and God wishes our children reared in her ordinances and doctrines. Religious teaching which leaves out these things is not religious teaching: it is a sham, and pernicious."

Assembly Hall is simply a large stone church, used for their gatherings in winter, as there are no means of heating the Tabernacle. The temple is an enormous pile of gleaming white granite, upon which money has been lavishly expended for thirty years—nearly three millions of dollars, and it has as yet neither floor nor roof, nor are its turrets finished. "Forty years was the Temple of Jerusalem in building, and this will be the same," said my guide. "If the forty years closed next week the temple would then be done." "What is it for?" "For the temple service." "And what is the service?" And he referred me again to Solomon's temple and the rites observed in it, but, as I thought, with only a vague notion what they were. He dwelt with loving detail upon the days before the railroad came, when these stone, hewn in the mountains, were brought to the city by long trains of ox-teams; and as he talked Prof. Norton's delightful account of the building of the cathe-

dral of Orvieto came again and again to my mind. He took me to the gravel heaps: "This gravel is all washed—the stones are all washed before they are built into the house of the Lord." "There are wonderful things in that building," and he called my attention to the star wrought in bold relief in the keystone of each of the windows. There are four rows of these, and between them are three of large stone bosses, carved with symbols in relief: upon the lower is the earth in various positions, upon the second the phases of the moon, upon the third blazing suns. "Strange meanings are hidden in those things," said the guide.

We rested a few moments in the lodge at the gateway. A dignified old man sat by the window, shaking with the palsy of age. He said: "I know from my experience that our doctrines are true. I have tried other faiths, but never found rest until I embraced this. The spirit bears witness with our spirit that we are the sons of God. Multitudes of men of all creeds will be saved. I have myself been baptized for more than fifty, some of whom have been dead three hundred years. Ah! I shall have lots of friends when I get there!"

On the opposite side of the street from the Temple enclosure are the rooms of the publication society, which prints the Book of Mormon, The Book of Doctrines and Covenants, the Song Book, and numberless tracts. It is almost needless to say that the Book of Mormon is regarded as a companion and supplement to the Christian Bible, containing the revelation made to the aborigines of this continent. The place of its concealment was revealed to Joseph Smith, and also a key, by the aid of which he was able to translate it. It is too tedious a book for any one to read who is not prone to believe it or anxious to become posted in the literature of Mormonism. Behind this, on Temple street, is the office of *The Woman's Exponent*, published by Emmeline B. Wells, a journal which wages vigorous war in favor of polygamy. Here we had placed in our hands a pamphlet, "Mormon Women's Protest," containing the speeches and letters of some thirty of the prominent women of Utah to a meeting held in the Theatre at Salt Lake, March 6, 1886, to protest against the Edmunds' Law and its execution. The purport of the contents may be sufficiently gathered from the sub-title, "An Appeal for Freedom, Justice and Equal Rights."

A little beyond this point are the residences of Brigham Young. They are fine adobe buildings, two stories high, and illustrated the

character of the man. Just beyond the first is the eagle gate across the street, so named because of the large guilded eagle with out-spread wings which surmount the central pillar. Beyond is the house of the bee-hives, named from two large adobe forms which ornament the enclosing walls; and there is the house of the lions, with the two beasts couching above the door-way. The mystic ceremonies of the endowment house, the curious symbolism of the temple, the half-Hebrew superstitions and usages wrought into the very fabric of the new faith, seem to find their correlate here. The man who was leading spirit of the new faith, who guided its migration and shaped it in its new home, reflected his own mind in these things. Was he, indeed, a mystic, fascinated with forms and symbolisms, carried on by vague impulses, yearnings, ill-defined visions, which seemed to him revelations? or was he, uncultured man as he was, simply a shrewd, forceful, unprincipled schemer, who appreciated the hold such things have upon the minds of the vulgar, and used them as instruments to augment his power? Who will answer the riddle? Is not every strong man a sphinx, which slays us because we are unable to penetrate its mystery? His photograph hangs in the Temple lodge, a strong, gross, heavy face, with keen and cunning eyes. What a marvelous role he played in the great republic of the nineteenth century?

The power of this church is everywhere thrust upon your notice. Here is Zion's Co-operative Merchantile Establishment, a large four story brick building with stone front. It is a joint stock co-operative store, of all kinds of merchandise, under church control. Its business is said to reach five millions of dollars annually, and it has branches in four or five cities of the territory. Originally, it was a protection to the people from the exorbitant charges of unprincipled dealers, but since the advent of the railroad this use has disappeared. It is now a speculation, enriching a few individuals and the church. The religious organization of the city is very complete. Nine blocks constitute a ward, and each ward has its own meeting house, where service is held in the forenoon on Sundays, and its own elder or spiritual head, who districts out his territory to subordinates in such a way that he is kept fully informed regarding the inhabitants of every house in it. Every Mormon must attend church, and faithfully pay tithes of all he possesses. The church is inexorable—pay or be cast out. Tales are told of one who entered upon mining and prospered greatly. At the end of the year

Brigham sent to remind him that his tithes were due. He drew a check for five thousand dollars. It was returned to him with comment, "This is not tithes." He threw it into the fire and was cast out of the church. The church controls the system of public schools; the very text-books which must be used are determined by the Faculty of the University of Deseret and the County Superintendents—a Mormon body. The best illustration of the extent and unscrupulousness of this power is afforded by one of the oaths of the Endowment House, as given by one who had passed through its ceremonies, whose account of them is published by the Salt Lake *Tribune*. She says: "They then proceeded to give us the first grip of the Aaronic or Lesser Priesthood, which consists in putting the thumb on the knuckle of the index finger, and clasping the hands round. We were then made to swear 'To obey the laws of the Mormon Church and all they enjoin, in preference to those of the United States.'" This subtle power of the church is felt everywhere in Salt Lake City; it controls business, social relations, politics. It is unscrupulously used by leaders who, having built up a species of theocracy, are determined not to allow the power to slip from their fingers. This the gentiles fear far more than polygamy. The dread which hangs over them is that at length, by yielding the issue regarding polygamy, the Mormon leaders will secure a State organization, and thus bring Utah permanently and irrevocably under their control. If this is done we shall behold in this free land the strange anomaly of a priest-ridden State.

But we have confidence that it will not be done. It is manifest that the measures of the federal government are telling upon the power of the Mormon theocracy. Gentiles tell you that plural marriages are now probably more numerous than before the passage of the Edmunds' law, and the leaders keep issuing bulletins to the faithful not to yield the faith revealed to the saints. But there is in them something of the defiance of despair. The leaders are in exile, hiding from the officers of the law; the marriages are secret, and wear the aspect of a crime; more than two hundred persons have been convicted and punished under the Edmunds' law; fines, costs, lawyers' fees, derangement of business—all these are weighing heavily upon the theocracy. Meantime their missionaries are all over Europe and America, making two thousand converts per year. They have spread beyond Utah: in Colorado, New Mexico, Arizonia, Idaho, Nevada and Wyoming they have flourishing

colonies — a great people, thoroughly united and willingly subject to the tyranny and extortions of their leaders. But, on the other hand, gentiles are increasing among them; gentile schools are getting a firm hold; the old leaders are dying off, and the young are less fanatical and more open to outside influence. There is a nervous anxiety as to the future in place of the defiant confidences. In time, we may be sure, if the hand of despotism is restrained, the forces of civilization will prevail peacefully over this oriental superstition.

J. W. Stearns.

MADISON, WIS.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

In order that the writer may not be misunderstood in regard to method in these papers, it is proper to state here that the conviction is very strong with me that there is certainly no natural science study at present recognized in our courses of instruction, which should be treated as an "information study" simply. It is admitted, of course, that there are some studies which are pursued more exclusively than others for the sake of the information to be derived from them; but, if my experience is any criterion, when information is the primary end, that is secured with the maximum speed and degree of assimilation when there is a large following of the true science method. Every child of ten years has performed a multitude of experiments, and has in his possession a very large mass of data derived from his own experience, which is available for true science instruction; and it only requires tact and understanding, on the part of the instructor, to bring this wealth of the child into his recollection and make it yield large returns. So in giving instruction in physiology, and indeed in all subjects, great effort should be made to bring into service the facts the child already has bearing upon the topic under consideration. If these facts have not been observed, or are too vaguely comprehended, then bring the child into sense contact with the facts if possible, and only as a last resort rely solely upon verbal or written statements. By all means, where the child possesses, or can be given the data for reaching a conclusion by rational processes let the conclusion be so acquired, rather than by direct statement from the teacher. Want of space must necessarily make the matter in these papers *suggestive* rather than exhaustive.

FRAMEWORK OF THE BODY.—EXAMINATIONS OF THE ARM AND SHOULDER.—OBJECTS OF THE LESSON. To fix the attention upon the facts that: 1. Our bodies contain many bones. 2. These bones are bound together, but in ways that admit of motion in many cases. 3. There is a provision to prevent noise, and irritation of surfaces which move upon each other.

Placing the finger under the collar in front a deep, hard notch is discovered just above the breast-bone. Moving the finger to the left it rests upon a bone which is carried up and down as the left shoulder is raised or lowered, but the breast-bone does not move and hence cannot form a part of it. The end of this bone resting on the breast-bone cannot be raised nor pushed from its place, and hence must be secured in some manner to the breast-bone. Following the bone toward the left it is found to extend to the shoulder, but, swinging the arm from side to side, this bone does not move and hence cannot form a part of it. Pressing the left shoulder against the back of the desk another bone is felt, which moves toward the right whenever the shoulder is thrown back. The first bone, however, moves but very little unless the shoulder is thrown up; the arm may be moved without producing motion in either of these; hence we conclude that three bones meet in the point of the shoulder,—the collar bone, the shoulder-blade and the arm-bone. Grasping the point of the elbow with the thumb and finger and flexing the arm, it becomes evident that the bone grasped moves every time the arm is bent and hence must be a bone in the fore-arm. Still holding the point of the elbow, with the arm straight and palm up, if the hand is turned over so that the palm is down it will be seen that this bone does not turn over, moving slightly at most, and yet if the fingers are moved along down the bone to the wrist it is felt to be continuous throughout. How can this be? Examination shows clearly that there is another long bone in the fore-arm, and that this must be connected at the elbow in such a manner as to allow its wrist to rotate part way around the other. In the back of the hand four bones are readily felt, and one above the thumb lying beside them; three distinct bones, shown by the joints and motions, must exist in each finger, and two in the thumb. Grasping the wrist just below the ends of the fore-arm bones, and pinching tightly while the hand is worked from side to side and back and forth, it becomes evident that the hand bones do not join with the arm bones; on the contrary, small bones, the number of which cannot be

made out by the touch, but which is eight, fill the space. There are then in each arm and shoulder thirty-two bones, or sixty-four in all. Could we see a human skeleton we should be able to count over two hundred bones which together constitute the framework of the body.

We have observed in machinery that whenever solid parts turn or slide upon each other there is always considerable noise, and in order to prevent excessive wear and heating oil must be used. In our bodies we have turning and sliping of hard surfaces upon each other, and yet however rapidly we move or however violently we jump there is neither squeak nor clatter. What provision can there be to prevent all this so perfectly? We shall see.

TWO WEATHERED BONES.—OBJECTS OF THE LESSON. To teach that in structure: 1. Bones possess a hard, firm, dense outer layer, and an inner portion made up of fine bars or plates, which interlock at various angles. 2. Bones are perforated with passage-ways through which blood vessels carry food to and waste from them. 3. This structure gives the greatest strength with the least weight.

Having obtained a large thigh bone of some animal, which has lain in the open air and become gray, saw it in two crosswise near the middle, and saw one piece in two lengthwise. Saw in two a similiarly weathered flat bone.

Examining the two bones; a hard, very compact layer is seen to comprise the surface of both forms. In the long bone it is observed that the compact layer is much thicker near the center, where the diameter of the bone is least, and that it thins out very much toward the ends. The spongy portion inside may be wanting in the center, but toward the ends it fills the whole space between the hard outer serface, and is densest at the ends. Why should long bones have this structure? The answer must be found in the strains they are called upon to stand, and the fact that they must be carried from place to place. The same amount of material in the form of a hollow cylinder will stand a much greater strain than if put in any other form. To prove this, take a sheet of legal cap and roll it from the long edge straight and smoothly upon a half-inch rod, and secure the free edge with mucilage. When dry withdraw the rod. Such a roll, placed on end, I have found to carry twenty-four pounds. This can be measured readily by tying a can cover by means of three long strings, to the hook of a spring-balance hanging from some support. Setting the roll on end in the cover it can be

crowded down by pressing a flat block held in the hand against the upper end, and the exact load carried at the time of breaking read from the balance. After the roll of paper has been crushed by its load it will be observed that the walls in some places have been forced in and in others out. Reflecting as to what would have been the result had the walls been stayed by such a net-work as exists in the centers of bones, we shall realize that a very much greater load could have been carried before breaking. We shall also be able to understand why the large bones are more strongly braced within. Several advantages are gained in this structure. 1. It requires the least amount of food to build the skeleton. 2. The skeleton being light the least amount of food is expended in carrying it around. 3. Since the body is lighter because of this structure the muscles may be smaller than would otherwise be required, and thus the gains are seen to be cumulative.

Looking carefully at the surfaces of these bones there will be seen numerous holes, some smaller even than pin holes, but others, especially near the ends, much larger. It is through these holes that blood vessels extend and convey the nourishment to the bone.

BONES BURNED, AND PLACED IN ACID.—OBJECTS OF THE LESSON. To teach that: 1. Bones are composed of animal and mineral matter. 2. The mineral matter gives to bones the needed rigidity and hardness. 3. The animal matter gives to bones the needed toughness and strength.

Gather two or three pounds of bones which have been thrown from the kitchen. Place the bones in some sort of vessel and weigh them as accurately as possible. Place the bones with the vessel in the stove and burn them thoroughly, taking care that no pieces crumble and fall from the can. Weigh after burning, and note the loss of weight. When the experiment with the burning is started, place also the leg bone of a chicken in a glass bottle, such as ground pepper is sold in, which has been nearly filled with water containing about one fifth its volume of hydrochloric or muriatic acid. Notice that soon after the bone is placed in the acid bubbles begin to escape from it. Set the bottle aside until the next recitation. If the solution has been strong enough the bone will be found to have lost its rigidity; it can be bent very readily, and if the water in the glass be evaporated a solid will be left. The burned bones, however, have lost their toughness, and also from one third to one half their weight, and are extremely brittle and easily broken. If hydrochloric acid is not at hand strong vinegar will answer, if a wish-

bone is used and two or three days are allowed. Do not dilute the vinegar. Hang the bone astride the edge of the glass, leaving one arm out for comparison.

COMPARISON OF BEEF AND VEAL BONES.—OBJECTS OF THE LESSON. To teach that. 1. Young bones lack the mineral matter. 2. Bones are fully hardened only after we are about twenty-five years of age. 3. Because the bones of children are flexible bad habits may result in deforming the body. 4. Because the skeleton is not fully hardened before twenty-five years, there is danger of dwarfing the body by doing too heavy work in youth.

When eating beef and veal we have noticed that while the beef bones are hard the veal bones, especially those of the rids, are scarcely more than gristle and not hollow or spongy. All bones are at first solid gristle, with very little mineral matter in them, but as they grow older the mineral matter is deposited and the central portions of the gristle [are absorbed and carried out through the blood vessels. As the bone increases in size, even the bony substance is absorbed and removed from the inside, thus preventing the skeleton, from building up solid and becoming needlessly heavy. Long bones, like those of the limbs, harden in spots first, usually near each end and in the middle, leaving intervening places which do not completely harden until the skeleton is matured; and it is by additions in the soft bones that these bones increase in length, their diameters being increased by additions to the outside. Flat bones, like those of the skull, remain unossified around their margins, and by additions to these the skull is made larger. Realizing these facts we can understand that forcing babies to stand too early or too long upon their feet, or making older children carry frequently too heavy burdens, may cause them to become bow-legged. Children whose food does not contain the materials which go to stiffen bones may be similarly deformed by their own weight. Sitting with the feet not touching the floor long at a time day after day tends to bend the growing thigh bones. Standing more upon one foot than upon the other results in making one hip permanently higher than the other. When we work much with the hands the skin comes to be thick in order to protect the parts beneath, but this tendency within us to meet a new demand is not peculiar to the hand; and hence it is that when we load upon the growing skeleton more than it should stand, the heavy burden, like the friction on the hands, tends to hasten the deposit of

bony materials in the gaps which should be kept open for growth, and the body is dwarfed.

A FRESH BONE AND JOINT.—OBJECTS OF THE LESSON. To teach that: 1. Bones are inclosed in a membrane through which their nourishment is obtained. 2. Joints are bound together by tough, inelastic ligaments. 3. A cushion of cartilege between bones prevents jarring and noise. 4. A fluid is secreted in the joints which lessons friction and prevents irritation.

Cleaning the meat from an uncooked bone of a chicken's or a sheep's leg, there may be found adhering closely to it a thin, transparent membrane, which can be readily separated from the bone with the point of a knife. This membrane is called the periosteum, and invests every living bone. In it the blood vessels break into minute branches before entering the bone proper, and it is as essential to the life of the bone as the inner bark is to that of a tree. Its under surface has the power of producing bone, and through its instrumentality bones become thicker. The felon is an inflamed condition of the periosteum which results in the accumulation of matter beneath it, stretching and tearing it loose from the bone, and thus producing great pain. Early lancing to the bone allows this matter to escape, and lessons the danger of having the bone girdled and the portion away from the heart dying and coming out. Examining now a joint, we shall find, after clearing away the flesh, that a tough, inelastic, sheathing membrane completely enwraps the ends of the two bones, holding them together. This is the capsular ligament. Cutting through this ligament, just over the joint, a cavity is exposed, in which is found a rather thick and very slippery synovial fluid, which performs the office of oil in machinery and is secreted by a delicate synovial membrane lying under the capsular ligament, but it cannot readily be distinguished. In some joints will be found band-like ligaments, which aid in holding bones together. The two ends of the bones are seen to be extremely smooth, and, if the knife is applied, it will be easy to cut off a rather thick layer of cartilage. This cartilage prevents clattering and enables us to move with much less jarring than we could without it. Sprains are usually injuries to the ligaments about the joints, and are extremely difficult to heal, immediate and absolute rest, for a time, being usually the safest treatment to adopt.

F. H. King.

RIVER FALLS, WIS.

READING CIRCLE WORK—FIFTH MONTH.

ELEMENTARY COURSE.

PAGE. Read pages 230 to 279. HISTORY. Read pages 153 to 183. PHYSIOLOGY. Read chapters 12 and 13.

ADVANCED COURSE.

QUICK. Read the account of Basedow and of Pestalozzie, to Pestalozzianism, p. 167. The lively account of the Philanthrophin will remind the reader of some modern experiments, and it will be a useful exercise to point out the truths and errors of it as far as possible. There is something very attractive about theories which make school a sort of diversion for the pupils, but the complete failure of all attempts to carry them out should prepare one to appreciate the great wisdom of the passage quoted from Kant, (p. 154,). Notice, however, that the failure is not absolute: educational practices were modified by the philanthropin.

FITCH. Read Lecture VI. The matters discussed are of such importance that it is better to limit the reading this month to a single lecture.

SULLY. Read chapters IX. and X. By the aid of the knowledge gained from these chapters, answer clearly and fully these questions: 1. What circumstances favor the remembering of anything? 2. What are the three most important characteristics of a good memery? 3. What sort of training is best adapted to develop each of these? 4. What abuse of the memory is prevalent in our schools, and what evils result from it?

POLITICS. Read from chapter XXV. to chapter XXVIII.

HISTORY. Read from page 480 to page 520. The outline of this history of the seventeenth century is very admirably presented in the "Blackboard Analysis" on page 422. A constant reference to it will serve to keep the events in their proper relations. The most important dates are 1648, 1685 and 1688; what are the events corresponding to them?

LITERATURE. In Brooke read to page 118. Again it is necessary to say, select the great names and be sure you know what is said of them; the others may be passed over lightly. The two great poets of this reading are easily selected what four; others seem to you especially worthy of note? Of the prose writers Jeremy Taylor, John Bunyan,

Thomas Hobbes and John Locke are most noteworthy. The reader will not fail to appreciate the value of such generalizations as are contained in the closing paragraph of section 92 and in sections 93, 105, 106 and 111. In SWINTON, read from p. 211 to page 288.

OFFICIAL DEPARTMENT.

QUESTIONS AND ANSWERS.

Q. Where a school district is composed of two or more towns, how is the tax voted at the annual meeting assessed?

A. Taxes are assessed upon the property lying in each town belonging to the joint school district in the proportion which the valuation of that part of the district bears to the valuation of the entire district. If the property in the town of A is one half of the whole, one half of the tax is assessed to that part; if the property in the town of B is one fifth of the whole, one fifth of the tax is assessed to that part; if the property in the town of C is three tenths of the whole, three tenths of the tax is assessed to that part.

Q. Are the director and treasurer entitled to salary, and are school districts obliged to vote a salary for any or all school district officers?

A. Only the clerk is entitled to compensation as an officer of the district, and he is not thus entitled unless the district at the annual meeting votes a tax for that purpose.

Q. At the annual school meeting the district voted a tax sufficient for all purposes for ensuing year, but voted it for incidental purposes. Can the board use the funds thus voted to pay teacher's wages?

A. Certainly. The evident intention of the district was to provide for all necessary expenses under the general term "incidental purposes."

Q. If the county board of supervisors failed at the November session to determine by resolution an amount of tax to be raised by each town, city and village in the county, equal to the amount received by each at the last apportionment of the school fund income, as provided in Section 1074, R. S., will the towns lose the apportionment of public money to be made in June next?

A. The last clause of Section 554 explicitly directs that the school fund otherwise apportionable to such county shall be withheld in such cases, and added to the capital of the school fund.

Q. If the district board objects to literary meetings being held in the school-house, but a majority of the voters in the district are in favor of allowing the meetings to be held, can the district board close the house against such meetings?

Q. If notice of a religious or other meeting is given out to be held in the school-house, will the teacher be justified in closing the house without permission of the district board?

A. These two questions are substantially of the same character. Section 435, R. S., expressly puts the care and keeping of the school-house and other property of the district in the district board. The same section also prescribes for what purposes, and under what conditions the board may grant the use of the school-house other than for a public school. The board may close the school-house against any and all persons, irrespective of wish or opinions of a majority of the voters. The teacher has no authority to refuse or permit the use of the school-house for any purpose. He is under the direction of the district board.

Q. Can a teacher prohibit pupils from using tobacco on their way to and from school?

A. No. Personal habits of pupils are properly corrected by influence not by authority, as a general rule. But especially out of school hours and away from school premises personal influence is the only legitimate means of correction.

Q. Can a majority of the school board authorize a teacher to teach on the 22d of February, and give him credit for that day?

A. A teacher is entitled to credit for the 22d of February and all other holidays occurring during term time, whether school is taught that day or not. But he may teach that day and offset that against some other day not a legal holiday which he does not teach, and thus make it count *two days* of teaching.

EDITORIAL.

RELIGION in the schools is again claiming attention in various portions of our country, and was presented in one of the addresses before the Wisconsin Teachers' Association, which we have the pleasure of laying before our readers this month. As the paper will be discussed at a future meeting of the Association there is no occasion for comment on it at present. On the general subject we venture to offer two suggestions. First, it ought to be evident by this time

that any profitable discussion on the topic will have to begin with a clear definition of terms. Religion is in fact a very vague word. (1) In the German school it is used to designate a systematic study of the Bible, its history, poetry, doctrine. (2) In other cases the study of doctrine, as embodied in a catechism or creed, is meant. (3) Many Americans who treat of this subject use it as designating simply the brief scripture reading and prayer which are in some places the opening exercises of the school. (4) Others give to the word the vague notion of reverence for a Supreme Being and recognition of Him in some public way. (5) Still others indicate by it the conscious personal relation of the individual soul to God, which may perhaps be more appropriately designated by the word piety. Other meanings might be mentioned but these are quite enough to show that any discussion upon this topic which does not begin by pointing out distinctly in what sense the term is to be used will only result in misunderstanding. It is manifest that the teaching of religion in our public schools, if we are to give the word the first or second meaning suggested above, is entirely out of the question. The whole drift of our experience as a nation is against it. The tendency at the present time in all countries is towards the complete secularization of the school. This does not mean an irreligious school, but simply that in the process of development a division of labor has become necessary, and the secular training of the child is directed by State schools, while his religious education is entrusted to other agencies—the home and the church. This then is the second suggestion—that the inevitable drift of events as well as the spirit of our institutions is against the teaching of religion in the schools in any such real and positive sense as the first two definition imply. The fourth and fifth definitions seem to imply that the teaching is to be incidental, undogmatic, the influence which a truly religious person unconsciously exerts. If this is so it is clearly useless, either to command or prohibit such teaching. The only way in which it could be secured would be by employing no teacher who is not a religious person, and this is again impossible among us. The practical topic, then, is the third definition. What value and significance this exercise has; whether by seeming to teach religion it is not injurious by preventing vigorous efforts for its real teaching through other agencies; whether by it the sacred rights of some are not invaded;—these are parts of the discussion. Meantime there is a legal aspect of this question which the courts must deal with, and in Wisconsin at least they seem to be tending to a final settlement of adverse to the exercise.

WE find that there is a disposition to discuss seriously the question "Why are there so few boys in our high schools?" Some months since a member of the school board of Canton, Ohio, asked of Supt. Klemm this question, stating that inquiry showed that in most cases the boys left school against the wishes of their parents, and therefore not from financial considerations, and asking whether the use of corporal punishment may not be the explanation. The Superintendent thinks not. He assigns three reasons: (1) the opportunities

offered in this country to earn money early; (2) the worship of the self-made man, which leads to a constant depreciation of higher culture at the fireside, in the pulpit, on the stump and everywhere in this country; (3) that "the methods of teaching in the higher grades of intermediate schools, as well as in the high school, are designed for and shaped according to the needs and wants of the girls, and not the boys;" in developing this idea he says: "There is a strong desire for exertion and application of his powers in the boy, which is not complied with at this age in the schools as they are. He is repressed, and made to progress as the girls do. Moreover, in many cases he has not even a male example in his teacher; if he is a weak character he becomes effeminate, if he is a strong character he is soon filled with disgust and quits school to find a better opportunity for exertion of those powers which find no satisfaction in a girls' school." We are inclined to think that the two suggestions under this head deserve much more serious consideration than they have yet received, especially the one regarding teachers. Male teachers and boys are rapidly disappearing together from our public schools. Superintendent Gault, of Pueblo, Colorado, discusses the same subject in *Intelligence*. He is inclined to fix the responsibility for the disappearance of the boys upon the schools. The courses of study, made almost exclusively by teachers, are at fault. "The student is liable to be debilitated by dry drill and routine studies, which tend to make the teacher a task-master and the pupil a victim of drills, examinations and machine work." He would have the courses more practical. "An examination of the courses of study in the Western cities of from 2,000 to 20,000 inhabitants will show that the course is almost invariably four years in length; that no provision is made for graduation or certification at an earlier date; that Latin or Greek, French or German are requisite for graduation; that from one fourth to one half of the entire course is devoted to the languages; that one fourth of the course is given to algebra, geometry and trigonometry; that the time which *remains* is expended upon history, science, and such studies as civil government, political economy; and such studies as combine the elements of drill and information, are deferred to the last year or two of the course. It is believed that in most schools pupils are held rigidly to the course; that is, a boy in the first year of high school work would not be permitted to take a much desired study in the fourth or graduating year. Thus the student is held under a cast-iron system that has little accommodation or adjustment about it." He would have the high school course made up of arithmetic, book-keeping, history, civil government, political economy, science and industrial drawing. More Arithmetic! Are not the schools ridden to death with arithmetic now? Must a boy be kept on arithmetic from six years of age to twenty? and this as a means of whetting his appetite for school! But it is as impossible for the critics to agree as for the questioners. Yet discussion of the topic is desirable. It seems to be established that from Ohio to Colorado the boys are not in the high schools as they ought to be: is it not a duty to enquire searchingly and impartially into the cause?

WHAT children read constitutes a very real and very valuable part of their education. Knowledge of the world is thus obtained broader and fuller than their own experience can possibly give them; ideals of life and character; entry into the thoughts and discoveries of older men. Hence the discussion of this topic is always of interest to those who have to do with the training of the young. The *Atlantic* for January contains a very suggestive article on this subject. It fully recognizes the significance of the early reading period and how great a part it has played in the formation of the minds of distinguished men. The imagination is fresh and vigorous at that period, and there seems to be enormous capacity for taking in knowledge and building it up into consistent wholes. Strong natural tastes show themselves, and it certainly is remarkable how many eminent men have at a very early age shown the bent of mind which rendered them distinguished. Such cases serve to excite the inquiry whether wise direction of children would not be more general if such tendencies were noted and their significance carefully estimated. The writer is disposed to question whether the reading now provided for the young in such profusion is, on the whole, an advantage. Its profusion is the first evil. By having too much of it the young reader makes nothing really his own; each new book simply displaces from his mind the impression of the last, so that instead of growing in his power to retain impressions he seems to be destroying what power of this kind he has. Cobbett devouring the Tale of a Tub until he could almost repeat it verbatim; the infant Scott shouting the ballad of Hardikanute which he had had read to him until he could say every word of it; Gibbon as a lad going without his dinner in order to enjoy to the full the history of the passage of the Goths over the Danube; little Margorie Fleming moving Sir Walter Scott to tears, by reciting Shakespeare's King John to him when she was hardly seven years old—these and hundreds of other cases serve to show us how natural and easy and profitable it is for a child to really master some favorite book, one well worth knowing. And who can doubt that such reading is far more formative of tastes and character than the hasty perusal of so many books merely for the excitement they afford? But besides this our author ventures the suggestion that our wholesome children's books may be an evil in that they stand in the way of something better. The most popular ones do not introduce the child to new worlds, grander and more profound than the one in which he lives, but only play with and vary his own world. They often stand between him and great authors whom he would devour if not surfeited with childish reading. Are Oliver Optic and The Eight Cousins better for the boy than the Arabian Nights, or Plutarch's Lives, or Scott's Ivanhoe? The question is whether simple amusement, or amusement with instruction and cultivation, is to be preferred; and the answer clearly is that is better to read Oliver Optic than nothing, but that wise supervision would constantly seek to minister to the young reader's appetite the best books which he is capable of perusing with zest. How little thought is given to this matter, which is really of the greatest importance! In the third place the writer calls in question the healthfulness of much of our so-called healthy read-

ing for the young. Which is the more wholesome for girls, Miss Edgworth, whose writings show children as deferential to their superiors, foolish, warm hearted, impetuous; or Miss Alcott whose children are made of the greatest importance to their silly elders, correcting their errors and follies, and assuming the wisdom and responsibilities of mature life. Miss Alcott's Rose discovers at thirteen that "girls are made to take care of boys" and that her business is to "manage people;" while the father of Miss Edgworth's Rosamond tells her, in her teens, that she is "just at that age when girls do not join in conversation, but sit modestly silent, and have leisure, if they have sense, to judge of what others say, and to form by choice and not by chance their opinions of what goes on in that great world into which they have not yet entered." Which is the more wholesome teaching?

OUR DRAWER.

WHERE ARE THE BIRDS?

Actual count showed that of the ladies present at a recent session of the Wisconsin Teachers' Association, twenty-four wore bonnets or hats trimmed with birds, two wore hats trimmed with feathers only that may possibly have been obtained without causing the death of the bird, and sixteen wore ostrich tips, velvet, and similar trimmings. At another session forty-one wore birds or wings, and only seventeen were free from the murderous symbols. While the following conclusion could not, from the nature of things, be so accurately determined, and is stated with some hesitation, yet some inquiry made it perfectly plain that the conspicuousness of the birds was a satisfactory guide to the experience and relative prominence of the wearer. Respectfully commended to the consideration of those ladies who teach small boys that it is cruel to stone birds and steal their eggs.

LANIUS.

GRAMMAR AGAIN.

A high school principal, whose name we are not liberty to give, writes: "I submitted exercise (p. 32 of January JOURNAL) to the pupils of the high school, giving them fifteen minutes to fill the blanks. The results were as follows: twenty-four papers written; one perfect; thirteen, 75 per cent. or more; nine, 60 per cent. or less: lowest grade, 37 per cent.; average standing of class 70 per cent. Shall *we* study grammar?"

MR. EDITOR: * * "Shall we study grammar?" That is an important question, and the experiment published in the January number is very suggestive; but to me it does not suggest that question. As a matter of fact probably every one, or almost every one, who tried to answer the questions in the Insti-

tutes for graded school teachers, *had* studied grammar,--studied it a long time, and been examined in it many times. The experiment, therefore suggests two things: Would it not be well to *use* the grammar we have studied? In such cases as the sentences given to be filled out most persons rely, not on rules or principles, but "on their ear." "That sounds right," they say; and if we are to be guided in difficult cases by such, a standard grammar is of little practical value to us. Therefore, in the second place it suggests the question: "*How* should we study grammar?" It would appear that we do not study it in such a way that we learn to use it: would it not be well to teach it to others in such a way that they will use it?" M.

* * * Your question about the study of grammar, and the illustration which follows, leads me to ask, how far the language work, now so popular, will prepare pupils for such tests? They are perfectly fair. The sentences are very simple. Will one who has been trained "to do by doing" be prepared to deal successfully with such cases in an exercise, or in speech or writing? S. D.

A CASE IN MORAL TRAINING.

DEAR SIR: I am teaching a backwoods country school, and about three fourths of it is boys. They are growing up with the idea that to be a man is to be able to "lick" whoever opposes them; that the best enjoyment of life is to go to dances and run horses; and, if they go to town, their first point is the saloon. All their play is scuffling, sparring, etc. Could you not, through the JOURNAL, offer some suggestions for the improvement of such morals? I presume there are many other schools of the same kind. F. E.

Specific directions cannot be given. The aim should be to create new ideals, and to awaken new interests in the minds of the pupils. The first is secured by example, by recognizing and fostering gentlemanly instincts whenever such are displayed, by subtly insinuating better ways through the discreet use of anecdotes and through instruction as to good manners. All this requires much skill, that the means used may not over-shoot the mark, and do more harm than good. Denunciation and nagging are worse than useless. The means for the second are numerous. Puzzles and problems will immediately interest; reading suitable matter to the school will help to awaken new ideas; suggesting games requiring force and skill will help on, such as leaping matches, quoit pitching, (in the season) snow forts and battles, etc. No sudden reform should be expected. Kindly and sincere interest shown in the boys and their pleasure will enable one to gain some influence over them, and gradually to introduce into their lives ideals and interests which will change many of them for the better.

WHY THE SUN RISES NORTH OF EAST?

EDITOR JOURNAL: If you can spare the space I would like to thank

Prof. Gillan for pointing out an oversight of mine in the April number of the JOURNAL, p. 165. Of course the rising and setting angle varies with the latitude, and whoever possesses a Fitz globe which, by the way, is the best globe I know of for general school puposes, can demonstrate the fact in this way: Bring the central point of the half-circle, which is attached to the horizon circle, to your place on the globe and its two ends upon the equator. The plane of the half-circle then represents the east and west plane to which we refer the rising and setting of the sun. Set the circle of illumination in place and bring our locality under it. The ball representing the sun will then be on the horizon, and the angle formed by a line drawn from your place to a point on the horizon under the sun and your east and west plane, measures the distance the sun rises or sets north or south of the east or west point of the horizon at the time of the year represented by the globe in the position you have it set. If the circle is now turned about, by means of its moveable base, so as to represent different times of the year, the variations in the angle in question will be readily observed.

F. H. KING.

SAUK COUNTY READING CIRCLES.

We clip the following paragraphs from the circular of Sup't E. C. Wiswall to the teachers of his county:

"In my circular of one year ago I expressed the hope that before the close of the year our membership would reach one hundred. This number was exceeded by twenty, a record highly creditable to us as a county. Yet the enrollment, alone, is not a safe criterion of our success. The beneficial results depend, not upon the number who *promised* to do the work, but upon the numbers who *have done* the work, and the thoroughness with which it has been done. Judging by this standard, we are unable to speak difinitely of results. Facts warrant the conclusion, however, that a majority of the members have done the work with a fair degree of thoroughness. Still there are some, too many by far, it is feared, who have done little more than to become members, thus proving disloyal to the cause and unfaithful to their pledge. Such persons should bear in mind that 'circles' and books are but helps, and of no value, except as they are utilized. The benefit derived from the work will be commensurate with the time and thought and energy put into it.

Those who have not undertaken the work, I invite to consider the following questions:

1. Do you not feel the need of broader culture and higher professional and literary attainments?

2. Is not a systematic course of reading more profitable than promiscuous reading?

3. Is it not probable that a course arranged expressly for teachers, by the best educators of the state, is better for you than a course arranged for the general reader, or any that you can make for yourself?"

The Reading Circles are as follows:

No. 1, Baraboo, Anna Douglass, Leader; No. 2, North Freedom, Julius Hortvet; No. 3, Merrimac, Clara Kunce; No. 4, Delton, Elsie Cady; No. 5, Spring Green, J. H. Terry; No. 6, Reedsburg, A. B. West; No. 7, La Valle, A. Benoit; No. 8, Loganville, Lena Hulburt; No. 9, Sauk City, C. F. Ninman; No. 10, Woodland, J. H. McNees.

A PUZZLE.

Some persons of our acquaintance are endeavoring to solve this puzzle and are not successful. Can it be done? Divide a square into thirty-six equal squares. Place the letter A in the square in the upper left hand corner and B in the one in the lower right hand corner. Go from A to B, passing through every square once and but once, passing in each case through the middle of one side of a square: i. e., you are not to pass diagonally through the corners.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

In a recent address, Edward Everett Hale made an interesting statement concerning the Boston Latin School when he was one of its pupils, some fifty years ago. "I am quite sure," he said, "that even cowardly boys of the school would have been more afraid to tell a lie than of any consequences of telling the truth." He attributed this high tone not to the discipline of the school nor to the example of the teachers, but to the right feeling of the boys themselves. "It was a tone given by the scholars," he remarked. "It was a thing understood among them, that a boy who would tell a lie was a cowardly and mean fellow, and as such was to be politely cut by his fellow pupils until he had learned better."

It is always an injury to the minds of childern to attempt to make them express thoughts they do not have. If a pupil has a subject concerning which he knows little, and about which he is *required* to write, he usually becomes disgusted, and concludes that "writing compositions" is a humbug.—*Educational Weekly.*

Many-sidedness of culture makes our vision clearer and keener in particulars, is his doctrine. For the noblest definition of Science is that breadth and impartiality of view which liberates the mind from specialities, and enables it to organize whatever we learn, so that it becomes real knowledge by being brought into true and helpful relation with the rest.—*J. R. Lowell.*

Is it true that for the average teacher the great educational thinkers have existed in vain? Is it true the majority of teachers depend upon devices, rather

than principles, for their success? The fraternity needs nothing so much as it needs a universal professional application of the great principles of the great thinkers on educational subjects in all ages. It is a reflection upon the profession, when all the enthusiasm of the day centers on "methods" rather than on principles, when teachers hunger for devices and reject philosophy.—*Journal of Education.*

LANGUAGE EXERCISES.

1. Distinguish the meanings of

He likes you better than me, and He likes you better than I.

The horse and buggy is at the door, and The horse and buggy are at the door.

He was going home, He went home, and He had gone home.

He grew handsome, and He grew handsomely.

2. Substitute other words or phrases of equivalent meaning for those italicized:

Pitt wanted to *prosecute hostilities.*

The period *was prolific of* great writers.

In India English *prowess* decided the *question of supremacy.*

The *obnoxious* measure was withdrawn at Pitt's *urgent solicitation.*

The most of them *preferred voluntary expatriation.*

The terms of peace though *lauded* by the king were bitterly *inveighed against,* as they *inadequately compensated* England for her *outlay.*

3. Supply the ellipsis in each of the following:

I love thee more than life.

Never did I fell the benefit of it more than then.

It isn't so dark as when we started.

I remember the day he arrived.

It is better to do that then to be idle.

It would have been difficult, though not impossible, to prove it.

I shall not use it unless forced to do so.

I scarcely ever see him except on Sunday.

4. Correct, where necessary, the following, giving the reason in each case:

I and my sister felt vexed because we came late to dinner.

Between you and I, he is not so clever as he thinks.

Thinks I to myself there's burglars somewheres here.

The cook won't give me none of his sauces.

This is one of the easiest grammar papers that has ever been set.

The Moor, seizing an enormous bolster, full of rage and fury, smothers her.

Harvey invented the circulation of the blood.

I felt awful bad at his conduct.

The man was very different then to what he is now.

Distribute those apples among James and his three brothers.

Our climate is quite as healthy as those of France and Italy.

His boss tried that little game when he donated the money.
I was not aware that you had been absent till yesterday.
He is only quarrelsome when he is drunk.
You have given me no easy question to answer.
Do you mind what I told you yesterday.
He agreed to return inside ten days.
Irving and Macaulay's style are very different.
It is no use in us reasoning any longer with him.

5. Write a word of directly opposite meaning to each of the following:

cold,	obedient,	crooked,	clear,	take,	hate,
right,	yes,	even,	hard,	busy,	gain,
live,	early,	neat,	sharp,	coming,	sweet,
true,	begin,	tall,	deep,	heavy,	wide,
open,	break,	old,	honest,	thick,	careful.
white,	cheap,	shorten,	ulgy,	slender,	
smooth,	heavy,	slow,	strong,	clear,	

6. Combine the following into a complex sentence:

The sponge is the soft skeleton of a sea animal. It consists of a great number of tubes. These are lined during life of the animal with soft flesh. It is chiefly found in the Mediterranean.

THE WALL MAP IN GEOGRAPHICAL TEACHING.

Since all classes of geographical facts can be represented on maps and since one map may record the results reached by many explorers and investigators, it follows that the study of the map must occupy a chief place in geographical teaching. This is a point repeatedly insisted upon by German and Swiss writers upon methods in geography. Good instruction in geography from this point of view will not consist in looking up answers to "map questions"—in memorizing a mass of descriptive text, in pointing out places upon a so-called "outline map"—but in a well ordered *reading from the map* under the teacher's guidance and in after work in fixing and defining the knowledge thus obtained. Such a course implies the use of two kinds of maps: the wall map from which with the teacher's help the pupil reads the main points of his lesson—the hand map of his atlas or geography in which he reviews and makes his own the ideas presented in the lesson. It further implies the division of the lesson hour into two parts, the first devoted to a reproduction of the lesson of the preceding day—the second half to teaching a new lesson. These lessons are not *assigned*, they are *taught* and the pupil carries away from the classroom an imperishable geographical picture of the region studied, a picture which he has himself read from the map and to enlarge and complete which he needs only more complete maps. The wall map then is the foundation of geographical teaching—the hand map its adjunct. Let us suppose that the lesson is the Relief of Continental Europe. In some previous lesson the pupil has read from the wall map the triang-

ular form of the continental mass of Europe and has noted its W., E., S. W. and S. E. angles. It is to the relief of this continental triangle that his attention is now directed. Something like the following will be the result—it being assumed that the pupil understands the way in which Highlands, Lowlands, etc., are represented on the map.

Teacher.—Look at the map and tell me in what part of Continental Europe you find the Lowlands represented, in what part the Highlands?

Pupil.—The Lowland is in the N. E. The Highland is in the S. W.

T.—Look at the map again and tell me if it is all Lowland in the N. E.

P.—Some small Highlands are represented there.

T.—Is the S. W. all Highland?

P.—There are some small Lowlands in different parts of the Highlands.

T.—State what you have learned from the map.

P.—N. E. Continental Europe is mostly Lowland. S. E. Continental Europe is mostly Highland.

T.—In what direction must I draw a line to separate the Lowland from the Highland?

P.—From N. W. to S. E.

T.—Some one may point to the N. W. part of the Highland. What river has its mouth just above it?

P.—The Rhine.

T.—Some one may point to the S. E. part of the Highland. What river mouth just above it?

P.—The Danube.

T.—Between what points then may my line dividing the Lowland from the Highland extend?

P.—From the mouth of the Rhine River S. E. to the mouth of the Danube River.

T.—This line is called the Mountain Diagonal of Europe. You may state how the Lowland part of Continental Europe is divided from the Highland part.

P.—Lowland Continental Europe is separated from Highland Continental Europe by the Mountain Diagonal, a line drawn from the mouth of the Rhine River to the mouth of the Danube River. N. E. of this line the surface is mostly Lowland. S. W. mostly Highland.

T.—We will now attend to the Highland part of Continental Europe. In what direction must I draw a line from the N. W. end of the Mountain Diagonal to clear the Highland on its West side?

P.—S. W.

T.—In what direction to reach the S. E. end of the Mountain Diagonal?

P.—East.

T.—What then is the form of Highland Continental Europe? What are its bounding lines?

P.—Highland Continental Europe has the form of a triangle, its bounding lines being the Mountain Diagonal on the N. E. side, a line drawn S. W. from

the Rhine River mouth on the N. W. side and a line drawn E. to the Danube River mouth on the S. side.

T.—Look at the map and tell me which part of this Highland is the highest.

P.—The S.

T.—Of what does this highest part consist?

P.—Mountain Chains.

T.—What name do you give to several Mountain Chains extending in one general direction?

P.—A Mountain System.

T.—This mountain system is called the Alps. You may state what you have learned about the south part of the Highland.

P.—The highest part of the Highland of Continental Europe is in the south. It consists of many Mountain Chains forming the Mountain System of the Alps.

T.—Look at the map and tell me how you see the rest of the Highland represented.

P.—Broad spaces bounded by Mountain Chains.

T.—These broad spaces are Plateaus and elevated River Basins. How do they compare with the Alps as to height.

P.—They are lower.

T.—In what direction do they lie from the Alps?

P.—W., N. and E.

T.—You told me that there were several small Lowlands in different parts of the Highland. See if there are any of these between the Alps and the Plateaus and River Basins and to what rivers they belong.

P.—There is one S. W. of the Alps and another in the E. The S. W. Lowland belongs to the Rhine—the E. Lowland to the Danube.

T.—Look at the Plateau region N. of the central part of the Alps and see whether it is joined to or separated from them.

P.—It is joined to the Alps.

T.—This region of Plateaus, Elevated River Basins and Mountains is called the Middle Mountain and Plateau System of Europe. The word "Middle" has reference to its elevation which is not so high as the Alps and not so low as some other Mountains, etc., of Continental Europe which lie outside this region. You may state what you have learned about this part of the Highland.

P.—A region of Plateaus, Elevated River Basins and Mountains lies W., N. and E. of the Alps. It is called the Middle Mountain and Plateau System of Europe. It is separated from the Alps in the W. by the valley of the Rhine River, in the E. by the valley of the Danube River and is joined to the Alps in the centre on their N. side.—*Abridged from the Popular Educator.*

SOME pray for gold, others for land without limit. Never, O Zeus, be such a disposition mine! but may I adhere to guileless ways of life, that when I am dead I may attach to my children a name that is not of evil report. — *Pindar.*

OUR BOOK TABLE.

THE RISE OF UNIVERSITIES.

THE RISE AND EARLY CONSTITUTIONS OF UNIVERSITIES, with a survey of Mediæval Education, by S. S. Laurie, LL. D. New York: D. Appleton & Co. 293 pp.

The subject of this volume has received too little attention in America, and therefore this is a most welcome addition to the admirable International Education Series, now publishing under the editorial direction of Dr. Harris. Mr. Laurie is a cautious, and critical historian, and after reading a lecture or two one surrenders himself unhesitatingly to his guidance. He traces for us the decay of the Romano-Hellenic schools which sprang up all over Europe under the empire; the rise of Christian schools, and the influences which led them on the whole to oppose or neglect the heathen learning of the times; the efforts of Charlemagne to promote education, and their results; the rise of Universities at Naples, Bologna and Paris in the twelth century, with the conditions which favored their growth; and then, in several very interesting lectures, sketches the organization, internal arrangements, discipline, studies, previleges and faculties of these great Mediæval institutions; concluding with a sketch of the rise of the English Universities and the University of Prague.

This bare statement shows that his theme is vitally connected with the general history of education during the period of transition from ancient to modern history. That portion of it which is special is full of interest and suggestiveness. For example, what light does history throw upon the question "What is a University?" The name of these institutions — *studium generale* — "had no reference to the encyclopædism of instruction." It rather contrasted these schools with monastery and cathedral schools, created especially for the training of the clergy and persons bound by religious vows. The new institutions had a broader scope — they were designed for all. Again, they were *specialized* schools, as opposed to the schools of arts, which had maintained a continuous existance and traditions from the times of the Roman Empire. In the early times the one at Naples was a school of medicine, that at Bologna of law, that at Paris of theology and philosophy. "The simplest account of the new universities origins is the most correct. It would appear that certain active-minded men of marked eminence began to give instruction in medical subjects at Salernum (Naples), and in law at Bologna, in a spirit and manner not previously attempted, to youths who had left the monastery and cathedral schools, and who desired to equip themselves for professional life. Pupils flocked to them; and the more able of these students, finding that there was a public demand for this high specialized instruction, remained at headquarters and themselves became teachers or doctors." Thus the universities were eminently practical, created to minister to the immediate needs of society. "There were no university buildings of any importance: the doctors taught in their own houses or in hired departments; and it would have been an easy thing for the whole university to migrate, and

desert the town, which owed much of its prosperity to them." This fact was a source of power, as privileges had to be conceded to them for fear that, if denied, they would remove to some other place, as a considerable portion of the University of Paris actually did at one time in consequence of a controversy.

Their degrees, it is worth while to note, were originally nothing but licenses to teach, as their meaning clearly shows. Doctor means teacher, and magister or master again signifies the same thing. These universities were learned guilds, to which admission was gained by examinations by recognized bodies, and the degree but signified that its bearer had been admitted and might begin teaching. "To teach or read (*legere*, whence lecture) was the function of the magister or doctor, and of no other, and in the thirty-fourth clause of Frederick's statute, section 4, it is ordered 'that no one shall teach at Salenrum or Naples, or assume the title of magister in medicine or surgery till carefully examined by the state officials and the masters of these arts.'" At Paris the Arts school, of more elementary or general instruction, was early attached to the university. "Quite naturally accordingly, there arose a necessity for marking the completion of the old trival course. The word *baccalaurius* naturally presented itself. The original of the word seems to have been *baccalarius*, and this is said to be derived from the low Latin, *bacca* (for *vacca*), a cow. Accordingly it originally meant a cowboy or herd, serving under a farmer. This history of the word curiously illustrates the analogy of the organization of universities with that of trade guilds. For, in France, where the term was first applied, the youth who had finished his apprenticeship was called *garcon*, and might receive pay as an assistant to a master. So also the apprenticeship to the *trivium* being finished, the youth was formally presented to the faculty, and recognized as a garcon or Baccalaurius Artium, i. e. as a young man serving under masters with a view to the mastership."

We commend the book to the attention and study of those who are interested in the history of education, and especially of the higher education. It is not purely antiquarian. On the contrary, the topics discussed in its pages touch many living questions, which are lighted up wonderfully when looked upon from a historical point of view. With one of these side lights, in a brief quotation, we shall conclude this notice. "Here we see for the first time, and this in France, the intimate connection of the university movement with freedom of inquiry. It is in truth to the free activity of the human mind in dealing with questions of abstract philosophy and theology, that we are indebted primarily for the scientific spirit. It was not the study of physical science which, either in the eleventh or twelfth, or afterwards in the fifteenth century, gained for mankind liberty of thought. This was the work of the philosopher and the man of letters. Physical science entered into the possession of a kingdom of liberty already conquered."

—SCHOOL ROOM GAMES AND EXERCISES, by Elizabeth G. Brainbridge, (Inter-State Publishing Co.; 135 pp.; price 75c) is a collection of devices for lighten-

ing the labor of the school for both teacher and pupil by transforming some of its work into play. The games relate to greography and history, spelling and composition, and arithmetic, with exercises for special days, for calisthenics and problems and puzzles. The book has been compiled from many sources, and will be found helpful to teachers of young children.

—STANDARD SELECTIONS, by John D. Billings, (Inter-State Publishing Co.; 135 pp., price 60c,) is a volume of standard recitations of high character, suitable for grammer and high school pupils. Most of them are old favorites—such as never wear out. There are also fifteen pages of memory gems, taken mostly from the poets. The volume is a very attractive one.

—Ginn & Co. have added to their Classics for Children Harriet Martineau's charming story of the French Revolution entitled, THE PEASANT AND THE PRINCE. It is worthy of a place in the series and will afford young readers both profit and delight.

—BEGINNERS' BOOK IN FRENCH, by Sophie Doriot, (Ginn & Co.; 298 pp.; price 90c) is full of ingenious devices for interesting the young learner and fixing in his mind the elements of the language. The comic pictures in which it abounds pique his curiosity and help him to hold words and phrases, in which without such aids he is apt to have very little interest. The book is carefully graded, provided with an appendix of inflections and a full vocabulary, and in fact is a very complete and attractive outfit for a young beginner in the language.

—Van Antwerp, Bragg & Co. issue a series of German Readers for elementary schools beginning with the DEUTSCHE FIBEL for youngest pupils, and continuing with the ERSTES, ZWEITES, and DRITTES LESEBUCH. They are specially prepared for American schools, and in general character are much like our best series of reading books, except that at the close of each is a series of exercises, grammatical rules and vocabularies. The books are abundantly illustrated and seem to be well adapted to their purpose.

—We have received from D. C. Heath & Co. advanced sheets of SUGGESTIVE LESSONS IN LANGUAGE AND READING, by Anna B. Badlam, of the Rice Training School, Boston. The first part of the book consists of outline lessons for oral work, and is full of suggestions to enable teachers to vary their work of developing the child's power of expression and make it useful to him. The second part contains suggestive lessons for blackboard reading and word building. The pictures are simple and adapted to re-production on the black board, and the child is guided to use his knowledge of the power of letters in finding out new words.

—Burrows Brothers, Cleveland, publish two dainty little books, WORDS CORRECTLY SPOKEN, a discriminating and helpful essay by E. M. Avery upon errors of speech and how to avoid them, which we should be glad to have every teacher in Wisconsin read, (15c); and POPULAR SYNONYMS, a pocket dictionary of words in ordinary use.

—HANDBOOK FOR SCHOOL TRUSTEES, (C. W. Bardeen, Syracuse, N. Y.) is a brief and handy digest of the chief points of the New York School laws.

— PRINCIPLES OF ELEMENTARY ALGEBRA, by H. W. Keigwin, (Ginn & Co.; 41 pp) contains only principles, and is of course to be used with a good set of examples and problems. The author wishes the pupils to discover and interpret their own formulas and make their own rules—as we wish other teachers would try to have them do.

— HORNE'S EASY EXPERIMENTS, (A. Flanagan, Chicago; 79 pp.; 25c) is a collection of easy experiments, involving trifling expenditure, and illustrating important principles in natural science. It also contains directions for making apparatus and many useful recipes.

— D. Appleton & Co. publish A COMPANION FIRST READER, by M. J. Wood, a collection of appropriate reading matter to supplement a first reader.

— A GRADED METHOD IN ENGLISH GRAMMAR, by M. D. Mugan, (H. I. Ingerson & Co., St. Louis; 35c) presents the practical part of the English Grammar analytically, so tersely and effectively as to make it possible for ordinary pupils to complete the study in a single year. The book has met with great favor in the St. Louis schools.

— The Inter State Publishing Company issue LITERARY SALAD, a game of quotations to be won by telling correctly the author of a greater number of the quotations than any other person in the company. There are 250 of them, from a wide range of authors.

— MUSIC.— Ginn & Co., publish THE BARCAROLLE, ($1.05) by Caswell and Ryan. It contains seventy choice songs, in one, two and three parts, from the best authors, such as are suitable for seminaries and vocal clubs.

— Oliver Ditson & Co. publish Emerson's ANTHEMS OF PRAISE, ($1.00) a book of carefully selected pieces arranged with accompaniment for piano or organ. There are anthems, hymns, pieces for special occasions, songs, etc.

— Oliver Ditson & Co., Boston, also issue a very pleasing new song by Pinsuti, entitled "A Maiden's Challenge," (30 cents); and a new edition of the song entitled "Dreams," by Richard Wagner (35 cents); also Cowen's new song, "Year After Year," with its graceful piano accompaniment (40 cents); "The Bird's Answer," by E. B. Smith (40 cents); "Jack and Joe," by Reinecke (35 cents); and "Proposal Apropos," by Churchman (35 cents).

— Ginn & Co. issue COURSE AND METHODS, by John T. Prince, agent of the Massachusetts Board of Education. It is designed as a hand book for teachers of primary, grammar and ungraded schools. Courses of study designed to be suggestive, are first given, and then, after a few principles of teaching somewhat badly presented, follow suggestions as to method in different subjects and stages of the work.

— THE NATIONAL QUESTION BOOK, by Edward R. Shaw, (E. L. Kellogg & Co., N. Y., 331 pp., $1.50), consists of series of questions upon all the branches in which common school teachers are examined, followed, in another part, by the answers. The questions are divided into third, second and first grades, and the editor thinks teachers will be aided in preparing themselves by trying to answer these questions at the end of the book. Such books seem to us of doubt-

ful utility. It is a great deal better and simpler to try to master the subjects and use common sense in decidiug whether this has been accomplished.

—GRAFF'S PLANT ANALYSIS, (G. G. Graff, Lewisburg, Pa.), contains blanks for a complete descriptive analysis of plants.

—ANNOUNCEMEMTS. D. C. Heath & Co. will soon issue Antonio Rosmini Serbati's *Method in Education*, perhaps the most important of Italian works on Pedagogy. They also announce *Synopsis of the Effects of Alcohol and Narcotics*. Ginn & Co. will issue in February Senior Mora's *Spanish Idioms*, containing over 10,000 phrases. Also Minto's *Manual of English Prose Literature*, a very serviceable volume. The Prang Educational Company are preparing a little work on *The Use of Models in Primary Schools*, with suggestive exercises.

NEWS AND NOTES.

—The vacant places in the list of high school principals published in our January number should be filled as follows: J. E. Abbott, Clintonville; Louis Folge, Unity. The post office address of Supt. Lyons, of Fond du Lac county, should be Fond du Lac instead of Mitchell.

—The editor prefers to spell orthoepy without a second *h*, but the compositor entertains a different notion, and had his way in the January number. The editor also thinks, and so expressed himself, that physiology implies some elementary knowledge of chemistry and physics, rather than the reverse, as he is reported to have said.

—The volume of addresses at the inauguration of President Eton at Beloit last November is before us and presents many points of interest. We shall venture to quote a single paragraph from the address of the new president. "I believe Beloit College is to stand in the futue, as in the past, for a scholarship that shall be patient, accurate, broad and well balanced. She is not going to provide short cuts to graduation, believing that time is a factor no less important in the growth of minds than in that of oaks or eagles. She is not to arrange her courses of study so that an immature mind may devote itself to the mere accumulation of information along one or two lines, perhaps choosing the things that shall give it the least possible discipline of strenuous exertion. She aims to train the mind to grapple any subject, however difficult or distasteful. A cord of wood is an excellent possession, but an axe, well tempered and sharpened, has vastly higher possibilities of usefulness; so a disciplined mind is more valuable than any amount of knowledge." It is the teaching as to what constitutes education which attracts attention in this paragraph, and its doctrine deserves to be carefully considered. Elections, Pres. Eton thinks, should be confined to the last years of the course.

—At the State examination held at the close of last year limited certificates were granted to Lewis E. Gettle of Juda, John W. Burns of Richland Center, Frank W. Baker of Eau Claire, Charles H. Sylvester of Boscobel, and William F. Owen of Amherst. An unlimited certificate was granted to H. R. Smith of Richland Center.

—The last catalogue of Beloit College shows a total of 353 alumni. Of

these 50 are teachers, the first of whom is found in the class of 1854. Among them are four college presidents and nine college professors. The other leading professions compare as follows: 87 clergymen and 14 theological students; 53 lawyers and 5 law students; 36 physicians and 4 medical students. There are 210 students, 58 of whom are in the college classes.

—The committee of the Association appointed to report on Mr. Lester's lecture consists of W. H. Chandler, C. A. Hutchins, and Lewis Funk. The committee to take further action in the matter of legislation for the education of feeble mi ded children consists of Rev. A. L. Chapin, Pres. W. D. Parker, Hon. W. H. Chandler, Rev. A. O. Wright and Pres. W. C. Whitford. The committee on changes in methods of issuing teachers' certificates consisted of State Supt. J. B. Thayer, Assistant Supt. W. H. Chandler, and Supt. Charles L. Harper.

—The increase of teachers holding State certificates is not very rapid. Those acquired by State examination and by the countersigning of diplomas —University, College, Normal School (including certificates of Normal Schools) and Milwaukee high school together only numbered 72 in 1885, and 82 last year. At this rate there is no fear of an excess for many years to come.

—Of the 6,246 teachers who attended the institutes during the past year 1750 had attended only district schools.

—The discussion of the mill tax and its effects now going forward makes the following table from the office of the State Superintendent of especial interest. As great differences exist between the effects on different towns in the same county as between the counties, and this would seem to emphasize the wisdom of doing something to equalize the burden of preparing the young for citizenship:

Counties.	No. Children.	Apportionment.	One Mill Tax.
Adams	2,505	$2.246 74	$1,494 16
Ashland	1,068	957 89	2,144 85
Barron	4,384	3,981 12	1,734 33
Bayfield	644	577 61	1,570 59
Brown	14,908	13,371 02	6,703 59
Buffalo	6,351	5,696 28	3,548 85
Burnett	1,250	1,121 13	428 65
Calumet	6,897	6,185 93	6,219 62
Chippewa	7,938	7,119 62	6,100 31
Clark	5,589	5,012 79	4,199 05
Columbia	10,229	9,174 42	10,666 79
Crawford	6,127	5,495 32	3,974 93
Dane	20,083	18,012 48	22,718 86
Dodge	17,439	15,640 19	22,334 58
Door	5,882	5,275 57	1,753 07
Douglas	760	681 64	1,895 82
Dunn	7,736	6,938 44	4,580 96
Eau Claire	9,430	8,457 79	7,360 43
Florence	406	364 14	1,126 84
Fond du Lac	17,394	15,600 72	18,866 51
Forest	110	98 66	680 72
Grant	14,122	12.666 05	12,488 34
Green	7,883	7,070 28	10.268 35
Green Lake	5,549	4,976 92	5,286 46
Iowa	8,599	7,712 47	7,736 48
Jackson	5,413	4,854 93	3,113 98
Jefferson	12,106	10,857 89	12.802 68
Juneau	6 209	5.568 87	3,360 89
Kenosha	4,912	4,405 58	7,151 36
Kewaunee	7,551	6.772 52	3,775 70
La Crosse	11,778	10,563 71	9,415 14
La Fayette	7,451	6,682 83	8,258 68
Langlade	1,217	1,091 53	1,141 82
Lincoln	1,979	1,774 97	2,064 38
Manitowoc	15,586	13,979 11	12.284 55
Marathon	10,231	9,176 21	5,184 53
Marinette	3.868	3.469 22	3.745 65
Marquette	3,706	3,323 92	1,855 79
Milwaukee	64,987	58,286 97	67.759 26
Monroe	8,618	7,729 51	4,474 96
Oconto	4,639	4.160 74	2,804 90
Outagamie	13,974	12,553 31	9.026 36
Ozaukee	6,495	5,825 38	6,206 78
Pepin	2,603	2,334 63	1,201 25
Pierce	7,174	6,434 38	4,505 70
Polk	4,435	3,977 77	2,320 32
Portage	8,732	7,831 75	3,107 65
Price	680	609 89	1,581 79
Racine	12,399	11,120 69	14,729 98
Richland	7,351	6,593 14	4,158 34
Rock	13,964	12,524 34	21,507 99
St. Croix	7,086	6,355 45	6,108 44
Sauk	10,694	9,591 47	7,640 40
Sawyer	728	652 95	1,964 98
Shawano	5,601	5,023 55	2,650 35
Sheboygan	14,909	13,371 92	14,844 17
Taylor	1,824	1,635 95	1,800 23
Trempealeau	7,148	6,411 07	4,559 04
Vernon	9,612	8,621 02	5,026 53
Walworth	8,472	7,598 55	14 758 26
Washburn	332	297 77	837 64
Washington	9,104	8,165 40	10,235 79
Waukesha	10,462	9,388 38	16,582 73
Waupaca	9,318	8,352 85	4,768 90
Waushara	5,292	4,746 40	2,909 73
Winnebago	16,448	14,752 25	16,940 15
Wood	5,216	4,678 24	2,052 68
Total	553,580	496,507 18	$496,507 20

—In his report to the Governor from the Board of Regents of the State University President Paul says: "It ought not to be inferred from this rapid increase of the facilities for instruction of the University in branches relating to practical life and industry, that the Board is committed to any narrow or degenerating policy in education. Neither in agriculture nor the mechanic arts is it proposed to teach any kind of mere handiwork. Liberal education has a higher sphere and purpose than this, and relates primarily and legitimately to the proper development and equipment of the brain, rather than to the acquisition of mere muscular or manual skill. The one education supplements the other, but the duty of the State properly ends when it provides the student with that which cannot be better attained in the office, on the farm or in the shop."

—The people of Ashland voted, almost without opposition, in favor of establishing a high school in that city.

—There is a strong sentiment in Hudson in favor of erecting a new high school building and the board have inspected the building at River Falls and have plans and specifications now under consideration. They have asked from the city council $27,000 for the erection of a building.

—The Hudson *Star and Times* says: "The industrial exhibition which closed the fall work of our public schools was one of the most novel, entertaining and at the same time practical, affairs ever presented by the pupils of this city. In its scope and versatility it surpassed all expectation, and proved so attractive that by special request it was continued through Saturday evening and all day Monday, so as to give all classes of people an opportunity to witness the handiwork of the school children. The idea Principal Dudgeon and his corps of teachers had in mind was to recognize the artistic and industrial as applied to practical training. Every pupil was accordingly urged to make some article for which he had the most taste, or skill, and bring it to the High School department for the exhibition. The result was a wonderful array of useful, artistic and novel articles, embracing drawing, needle work, paintings, mechanical conceits of manifold patterns and degrees of excellence. Nearly every pupil had some exhibit, and the whole, arranged in departments, formed a highly creditable display, which can not fail to stimulate the utilitarian side of school life, and bring to the study of books a spice that will make them far more relishable."

—The Fort Atkinson high school reached an enrollment of 150 during the past term, and the senior class numbers 18, the largest in the history of the school.

—The high school at Boscobel, C. H. Sylvester principal, expended one hundred dollars in purchasing books for its library this year. The library has now nearly nine hundred volumes.

—The reports of the visiting committees to the Normal Schools for the year just past are of more than usual interest; and that of the committee to the Oshkosh School will attract special attention for two reasons: First the recommendations of the report are important and novel. They urge the adjustment of the English Course in the State University and the Elementary Course in the Normal Schools so that they shall complement each other; combining the work of the advanced course in one school or transferring it to the University, the student still to graduate from the Normal School; they call attention to the very large number of students

in the school without any intention of pursuing a serious course of study and proper preparation for teaching, and urge that remedies be found for this; that the school should be relieved of much of the preparatory work now done there by remanding pupils who need such tuition to the grammar schools; and that a closer adherence to the rules for admission be observed, so as to diminish the number of those who attend the school rather to find employment as teachers than to fit themselves to teach.

—The second source of special interest in this report is the letter of Robert C. Spencer, a member of the Committee, in opposition to the religious exercises observed at the opening of the school each day, on the ground that they are an invasion on the rights of some members, or possible members, of the school; and that the practice is contrary to the principle of separation of state and church, upon which our government is based. To this the chairman of the committee, Hon. J. G. McMynn, replies that the responsibility for the exercise rests with the Regents, whose rules permit it; and that they are justified in their action from the example of the State Legislature in opening their sessions with religious exercises, and from the practice in the State prison and the various State institutions for the unfortunate classes: he quotes from Washington's Farewell Address: "Let us with caution indulge the supposition that morality can be maintained without religion," and affirms that the State is the people and the teachers agents of the people, whose will they obey; a large majority of the people "demand that the universality of law, the dogma of immortality, and the doctrine of human accountability shall be taught as ethical truths." But no summary can give a just idea of the discussion which deserves to be read completely and carefully.

—The public day school for mutes now in operation under the management of the school board of the city of Milwaukee has an attendance of thirty four pupils, divided into three grades under four teachers.

—In response to a resolution of the school board, Supt. Anderson reports that the teaching of penmanship in the city schools is not satisfactory. The teachers are earnest and faithful enough, but the superintendent finds three obstacles to success. 1st, an imperfect knowledge of the physiological act of the child in writing; 2d, a blind method of handling the matter, due to excessive reliance upon such maxims as "We learn to do by doing" and "Practice makes perfect." "I ought to say," he writes, "that those who have applied these maxims in the instruction in writing, have demonstrated conclusively that the opposites are true, and that the practices upon which they have staked their success make imperfect, and that the child actually becomes unable to learn penmanship because of '*doing*' insisted upon by the teacher." 3d, the early use of the pen as an aid in learning other lessons. In the three lower grades one fifth of the work in writing is done as penmanship and four fifths in other tasks. "The difficulty the child meets is, that if he writes as well as he possibly can, he will not get his spelling or his language lessons, or whatever the principal task is, as well as he possibly can, and he is consequently disposed to slight the one task of writing for the sake of meeting the teacher's requirements in the special lesson on which he is engaged."

—The following item was omitted in the report of the State Teachers' Association: Superintendent-elect Thayer

was present the last A. M., and in response to a call from the President made a short, modest speech. He was not able to outline his work for the future, but said his only ambition was to do what he could to promote the welfare and progress of the schools of Wisconsin. He asked the support and cooperation of the Association. He was greeted with hearty applause by the Association and his remarks were well received.

—Supt. Anderson does not favor the employment of special teachers of penmanship on the ground that in an elementary school the instruction is only in such matters as are essential to every one; and hence the teacher of the school must stand to the pupils as an exponent of these requirements—one who has at least all the knowledge and attainments which they are required to get. If a special teacher is employed it follows logically, in the pupil's mind, either that he does not

—For all the schools of the State last year 7,893 teachers were required.

—O. E. Wells, formerly Superintendent of Schools of Waupaca County, has accepted the principalship of the third district school in Appleton.

—The Appleton public schools now employ forty-four teachers. Twenty-two of them belong to the Teachers' Reading Circle, and are pursuing the advanced course, I.

—Under Superintendent Hoskins, Reading Circles are springing up in Jackson county. One was organized at Merrillan on the 15th of January. Others are to follow soon.

—In Sauk county at the present time eighty-two teachers are active members of the Reading Circle, a large number of the Advanced Course.

—In Waupaca county fifty-six teachers are reported as doing the work of the Reading Circle, and the list is not yet complete.

PUBLISHER'S ITEMS.

—Our books show that a large number of subscribers are in arrears for the JOURNAL. It is much more satisfactory to the subscribers and to the publisher to have payments made in advance. If you are in arrears seek to have your name transferred to the list of paid up subscribers as soon as possible.

—In ordering a change of address always give the place *from* which, as well as the place to which you wish your address changed. This is necessary to enable us to find your name on our books. Not a month passes in which we do not have to write asking "*from* what place do you wish your JOURNAL changed.

—The circulation of the JOURNAL ought to be greatly increased this year. If you find it useful and worth the price paid for it can you not recommend it to others? We will send sample copies to any address on request. 11,048 different teachers were employed in the State last year. The circulation of the JOURNAL ought to reach 5,000 copies.

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INSTRUCTION IN CIVICS IN THE PUBLIC SCHOOLS.

"Breathes there a man with a soul so dead,
That never to himself hath said,
This is my own, my native land?"

"What constitutes a State?
Not high-raised battlements or labored mound,
Thick wall, or moated gate;
Not cities proud, with spires and turret-crowned;
Not bays and broad armed ports,
Where, laughing at the storm, rich navies ride;
Not starred and spangled courts,
Where low-browed baseness wafts perfume to pride;
No! *Men*, high-minded men,
With powers as far above dull brutes endued,
In forest, brake or den,
As beasts excell cold rocks and brambles rude,
Men who their duties know,
And know their rights, and, knowing dare maintain.
Prevent the long aimed blow,
And crush the tyrant while they rend the chain,
These constitute the State;
And sovereign law, that States' collected will,
O'er thousand globes elate,
Sits empress, crowning good, repressing ill."

These lofty sentiments and truths furnish the text for this paper, and indicate the aim and outcome of instruction in civics in our public schools.

A strict interpretation of the title would exclude an inquiry into the

necessity for such instruction, but it is always well to ask,—on what grounds shall instruction in such and such subjects be given? To answer this question it is necessary to ask and answer another. Why do our public schools exist? On what grounds are all the people taxed to support the public schools? On the ground that in a free, self-governing State, the citizens should be intelligent and virtuous. The first and most important work, then, of the public schools is to make good citizens. But why give special instruction in the schools on the duties and privileges of citizenship? Are not general intelligence, "use and wont" in citizenship, sufficient?

In the early days of the republic, when one soul and mind animated a patriotic, homogeneous people, special instruction in the schools may not have been needed. But *now*, the conditions are changed. When a vast horde, many millions of all nations, tongues and religions, the ignorant, the down-trodden, the oppressed, with faint knowledge of the spirit and working of our institutions, have swarmed to our shores and spread themselves abroad over the land, and share with us our heritage of freedom and self-government, bought with such price of treasure and blood; when this "land of the free and the home of the brave" is made the free dumping-ground of the off-scourings of Europe, of her alms-houses and prisons; when, owing to the changed conditions in the production and distribution of wealth, great and hostile classes are arrayed against each other; when legislation tends to class-legislation, instead of for all the people; when partizanship is stronger than patriotism, party above public good; when public office instead of being a public trust is sought and used for personal and party ends; when a large and increasing body of citizens, through selfish apathy, or disgust and despair, cease to exercise the functions of citizens; than, indeed, it is high time, not only to instruct the young for future citizenship, but also, if possible, to arouse adults to a sense of the public danger and a sense of their duty.

Such being the need of instruction, what shall the instruction be? In general, it must be such as will cultivate the sentiment and spirit of patriotism, and prepare the citizen not only to perform the ordinary duties of citizenship, but also to fulfil the functions of law-maker and law-administrator. The instruction must embrace all grades from the primary school to the college and university.

It is not enough to teach the constitution of the United States and of

Wisconsin, as required by the statutes of Wisconsin. Pupils are not prepared to receive such instruction before the grammar school, and one half, at least, of the pupils of our public schools never reach the grammar grades. *These* must not be neglected; it is imperative that *these* should receive such instruction in civics as they can comprehend.

The object of the public school, then, is to make good citizens. What is a good citizen? What are his qualities or virtues, as such? They are two-fold: (1.) Personal, (2.) social or civic. The personal virtues may be stated as follows: honesty, truthfulness, independence, self-support, industry, etc. The social or civic virtues are: patriotism, respect for and obedience to law, regard for the rights of others, respect for property, public and private. These qualities or virtues are interdependent, shade off into each other, as it were, and imply good moral character. Good citizenship, indeed, means good morals, and, I take it, all sound instruction in civics must be based on *moral* instruction.

Such being the qualities, or virtues, what are the means for securing them? 1. *Knowledge.* 2. *Training.* Virtues consist of sentiments or emotions and habits. Thus it follows that there can be no *sentiment* of patriotism without the *knowledge* of what our country is, its greatness and glory, its freedom and justice. As mere sentiments or emotions do not make good men or good citizens, sentiments must be reinforced by the repetition of good actions until they become habits—these are the results of *training*.

The knowledge and training necessary to make good citizens may be classed as general and special. The general training which the discipline of every good school gives in thought and action has, I think, a direct bearing on citizen character. Every *good school* gives training in good morals and habits, trains the pupils to regard constituted authority, to respect the rights of others, to respect property; trains in habits of truthfulness, honesty, industry; in short cultivates both the personal and the civic virtues. So, too, the general knowledge, i. e., knowledge other than of civics, by increasing the general intelligence of the citizen, both directly and indirectly raises his character and ability as a citizen.

Thus, while I think the general training and intelligence which every *good* school affords, are no insignificant preparation for citizenship, it does not follow that there should not be special training and instruction in civics. What I would enforce is this: special instruction in civics in a bad school cannot take the place of instruction in sound principles and

the formation of noble character. The special training in civics must, under the circumstances, be merged in the general training in what may be called the *civic virtues* of the *school*, training in the virtues which the general and special relations of the pupils to one another and to the teacher naturally suggest, as,—respect for authority, obedience, courtesy, regard for the rights of others, etc.

Of the special instruction in civics, the following analysis may be made: 1. Instruction in the personal relations of the citizens to one another and to the State. 2. Knowledge of our country and its government, national, state and municipal, their origin, history and functions.

The personal relations of citizens may be classed thus: (a) Privileges, (b) duties or obligations. The special privileges enjoyed by the citizens of the United States are: protection of life and property; civil and religious liberty; personal liberty; the right to labor and enjoy the fruits of one's own labor; a voice in the making of the laws; the right to vote for the rulers; the right of being elected to office; holding positions of trust and honor in the State. The duties and obligations are as follows: To respect regularly constituted authority; to obey the laws; to respect the rights and privileges of others; to respect rights in property; to earn one's own living; to contribute to the support of the State; to be patriotic and public-spirited; to take an active interest and part in the affairs of the State.

The knowledge of our governmental institutions and instruction therein are susceptible of a varied analysis and classification, according to conditions and circumstances. I submit the following: 1. The national government, its origin and history, its departments and their respective functions. 2. State governments, their departments and functions, and relations to one another and to the general government. 3. Municipal and other local governments and *their* special functions and relations.

These three divisions may be so enlarged as to include all the facts and relations of our social, political and economic life; as, the production and interchange of wealth; taxation; the powers and relations of corporations; the relation of capital and labor; wages; the prevention and punishment of crime; charities and reforms; education; etc., etc.

As stated above, this scheme has reference to the whole field of instruction in civics, from the primary school to the university. The special inquiry before this body is, I take it, what instruction in civics

shall be given in our common and high schools? I submit a brief outline based on the analysis given above. The instruction should begin in the upper primary grades, second or third reader, according to the age and intelligence of the pupils. In these grades I think I would begin with some general facts about our country, as,—its name, its extent, (when the sun's last rays are leaving Alaska they are kissing the mountain tops of Maine; how long would it take you to walk from the Atlantic to the Pacific?). I would tell the children of its greatness, its riches in material resources, its variety of climate and of productions, its power, the high estimation in which it is held by other nations; I would then speak of the protection it gives to its citizens, the freedom they enjoy, and the privileges. Our country spends less for war and more for the education of its citizens than any other country in the world. It opens its doors and shares its privileges with all the oppressed of all nations. If there was time, I would like to tell the children some things about its origin, the early struggles and privations of its founders, their love of freedom, their endurance and bravery, and their glorious victory. They should sing the patriotic songs, and commit to memory the brave words, the patriotic speeches of its heroes.

To this I would add, in the intermediate grades, the privileges and duties of citizenship. The possession of the privileges, the enjoyment of the protection and freedom, and all the advantages that these imply, carries with it corresponding obligations and duties. True patriotism does not, as some assert, lie in self-interest, but is based on unselfishness, the recognition of the rights and privileges of others, on the Golden Rule. The foundation of patriotism, of the privileges of citizenship, is respect for lawful authority, obedience to law, a willing surrender of some rights and privileges for the good of the whole. These principles should receive their illustrations and their enforcement from the analogies of the family and the school-room. The universal principles of morality underlie these civic truths, and it is the failure to apprehend them that makes socialists, communists and anarchists.

The great and stirring events in our history, stories and anecdotes from the lives of our great men, such as Washington and Lincoln, should be related or read. Gems from our patriotic poety and prose should be learned, and the origin and meaning of our holidays, as the Fourth of July, Washington's Birthday and Decoration Day should be explained.

To this should be added, in the upper intermediate and lower grammar grades, a simple outline of our national, state and municipal governments, with the differences in their powers and functions, the subdivisions or departments of the governments respectively, and the special functions of the different departments, together with the simpler forms of the machinery of party government. In the upper grammar grades, in connection with the study of United States history, a more thorough study may be made of the same field as given above, with perhaps an inquiry into the principles that underlie the social and economic questions of the hour. In the high school a more thorough study of the constitution of the United States should be taken up, together with an inquiry into the theory and origin of government, and the more advanced topics of civics, as politico-economics.

As to method, this must be left, at least in the lower grades, to the enthusiasm and intelligence of the teacher. As we have no suitable books the instruction must be oral. For the grammar grades, in the absence of better books, I would suggest Marcy's Our Government, and Nordhoff's Politics for Young Americans. I know of no one book that covers the ground I would lay out in civics for the high school.

In conclusion, I will say that no books, no technical instruction, can take the place of the profound influence of the life and character of an upright, reverent, true, patriotic, enthusiastic teacher.

Albert Hardy.

La Crosse, Wis.

OVER-ELABORATION IN PRIMARY TEACHING.

In presenting the topic assigned me, I wish it understood that the over-elaboration criticized has been observed in the lower grades of city schools. In the average district or mixed school the tendency is more likely to be toward under-elaboration. The faults to which attention is called are worthy of criticism, and are dangerous, not because they are wide spread, but because the primary teacher who most indulges in them is too often the model for a host of weaker imatitors.

The new education brought us out of an idolatry of words only to deliver us too often to an idolatry of things; as though the teacher who failed to vivify the word could not fail to vivify the thing; as though an object may not be as unmeaning a symbol as a word. "The mind,"

says Carlyle, "sees in an object what the mind brings the power of seeing." But, "Ideas first, then words," "Use objects to get thought," are interpreted to mean a multiplying of objective illustrations, a piling up of apparatus for so-called sense culture. Theory and practice are so different that these excellent principles, the wisdom of the sages, are constantly being wrecked on the sea of practice. It is consoling to believe that "a grand and noble end will wisely control all means to it." Yet every great principle of education has suffered from extreme and mistaken application. There is still the old groping in the darkness for patent methods and rules of thumb, the follow-my-leader hunt for devices with a pretended reference to some faintly understood glittering generality of pedagogical polity.

If we once clearly understand that every truth has limitations, that the wisest method may be used to excess, we shall have done much to guard against the vacillating tendencies of educational practice.

Our sterling principles of education we have always with us, but our methods,— "no man knoweth whence they come or whither they go." No sooner am I familiar with the teaching of technical grammar than the craze for language lessons sets in. Spelling was taught by the old fashioned spelling book, spelling down methods, when the wave of progress carried out the book. Now when one has made himself a crack teacher of spelling, without a book, behold the revised spelling book comes sneaking back. So it was with mental arithmetic. We had it; we had it not; and now we have it once again. It is remarkable how easily these kinks come and go. Our leaders ride their hobbies in and out.

G. Stanley Hall examines 600 little children in the Boston public schools, and, as a result, finds that 90 per cent. of these do not know where their ribs are. Then the cry is raised: "What is the use of teaching these children to read, when they do not know where their ribs are? What will become of this great American republic, if children are to grow up without being taught where their ribs are?" So the blushing school-ma'am is set to work to develop the ribs. It is long since we dethroned the object lesson. It once had lordly sway. The porosity and non-transparency of bread became household facts. Children were everywhere being lead to see that a horse had four legs, one on each corner and a tail in the middle, behind.

Years ago pupils began the study of arithmetic and other branches

by learning a series of definitions. I was taught that arithmetic is the science of numbers and the art of computation. To make this perfectly clear, I had further to learn that science is knowledge systematized and explained. I have never forgotten these definitions and I think I never will, though it took years to make them full of meaning. That was the day of the old education, when the mind was early furnished with a store of true and matured forms to which a growing experience gave greater significance; the day of faith in text-books and lesson hearing. There was but little illustration, objective teaching, or stimulation of the perceptive faculties.

Then came the light of the new education. No more memorizing; out with the text-books; in with the objects,—splints, beans, shoe-pegs, corn, sand, stones, numeral frames, charts, globes, pictures, colors, moulding boards, anything and everything—the more the merrier. The child will now learn by doing. All over the country the festive educator beamed with joy as he heralded the era of "things before words." "Create a need for a term before giving it." "Never tell a child anything it can find out for itself." These principles are so incontestibly true, *with limitations*, that the poor teacher must per force accept them. It is their acceptance without limitation, that has led to the over-elaboration so characteristic of the primary work of to-day.

The teacher at first snuffed dubiously at the boxes of new and untried apparatus. She of the old regime had her trade to learn over again. The mighty work of "developing" began. The child was told nothing that by hook or crook could be squeezed out of him. The plan is, develop what you want to teach the pupil, that is, get him to tell it to you, and then feed him on his own strippings. Hours for developing, but not one minute for direct telling. Be fertile in devising means of illustration. Seek to make the simple, simpler. Have your pupils boom along impelled by the joy power. That primary school in Vienna supplied with $25,000 worth of apparatus for illustrative purposes is held up as an ideal. I visited a class of beginners where the teacher had a case of twenty-two different sets of objects for number work, to say nothing of devices for teaching reading and language. $2+2=4$,—a fact great in its simplicity. But bring on the splints and counters, the shoe-pegs and corn, the teacher in a flurry of enthusiasm; and see the unfortunate fact put through the agony of development. "Nine" is before the class. It is to be developed. Momentous occasion! The

class is worked up to a pitch of expectant enthusiasm. The child, after skillful maneuvering, is led to see that this number is made up of nine ones. They are are counted and fondled lovingly—almost personified. It is then separated into two fours and a one—poor little *one*, he has no brother! So the development proceeds, if any time remains.

Arithmetic becomes number work; geography, place lessons; grammar, language lessons; spelling, talking with the pencil. Technical terms and difficult words are rendered into baby talk and nursery gabble. Courses of study are overhauled, so that the simple may precede the complex, and each teacher grades her work with the same view. The teacher acquires a power of detecting shades of difficulty, and always proceeding from the simple to the less simple by infinitesimal degrees. I have heard an institute put in an hour discussing whether 6—3=3, or 3 from 6=3 is the simpler form, and the arguments adduced would delight the scholastics of old, while one not of the elect thought "strange, such a difference there should be twixt tweedledum and tweedledee." The road to knowledge is no longer rocky and uneven. It is boulevarded in the highest style of the art. I remember listening for thirty minutes to an exercise with a class of young pupils. There was animation and interest. Pictures objects and charts were liberally used. Not being clear as to the object of the exercise, I asked the teacher. She said: "I wished to develop the word 'man,' but, dear me, it will take another lesson." This brings to mind Dr. Stearns' story of the boy who was asked on his return from school: "What are you studying, Charley?" "Ain't studing anything," he said. "What! don't you learn anything at school?" "Oh, yes! learn what I allers knowed."

You find these exponents of a mistaken gospel of the new education in all schools. There is the teacher into whose room it is safe at all times to bring the average visitor. Her smile and manner are all the books prescribe. She is always beaming and lovable. She is never at a loss for some interesting point to bring before the class. There is a maximum of talk and a minimum of study. The unsophisticated visitor comes away thinking what a pleasant teacher she is. Her class are so much interested in their work! How different from that stern Miss Sit-up-straight, in whose room there is no rest for the wicked and very little for the just! Yet when the principal goes round to grapple up the results of the year's work, Miss Sit-up-straight's class averages up in the

90's, while the pretty teacher explains away her 50's by showing the principal an article in her favorite school journal, showing that true culture and mental growth are not to be measured by per cent. These are the folly of examination cranks, and machine teachers. If the examination interferes with our theories, so much the worse for the examination. It must go. We rise superior to it, and teach so that the examiner gets nothing.

The mistakes are in these directions:

1. "There are few things so vicious as the attempt on the part of teachers to coax pupils' attention by supplying a perpetual fascination through devices or personal favor."

2. Instead of leading the child up to higher intellectual levels, the teacher comes down to amuse below the mental capacity of the pupil.

3. There is an over-elaboration of simple things, with illustrations too numerous and too babyish. We are not training to good mental habits when an exercise leaves a class in a state of hazy repletion.

4. Everything is brought ready made to the mind. There are no difficulties. It is goody on a spoon. Sugar candy teaching in the lower grades means dyspepsia in the upper.

These are the evil tendencies of the new education. They must be checked. It is most necessary, as Antisthenes says, to unlearn evils. Our reaction from a tyrannical system of teaching has made us forget that the end of teaching is not to place certain information in the mind of the pupil in the easiest way possible, but to attend to its retention and assimilation and be sure that the process strengthens mind and character. If a pupil is not capable of walking alone, nothing he can have to show can rescue his school training from condemnation. The world of experience presents difficulties for mastery, and the power acquired in mastering those of the school is here helpful. The youth for whom the rough road of knowledge has been made royal finds himself handicapped in the struggle. The highest function of the teacher is to make himself unnecessary.

What President Eliot calls the "Calvinistic" theory in education is not advocated. By all means lawful, make school interesting and attractive, but let it be the interest and attraction which the stimulus of healthy exertion always brings. Our pleasantest school memories are of hard winters' work in meeting and over-coming difficulties. We live in the pleasant labors of the past. I have not caricatured a pres-

ent tendency, to become an alarmist. John Stuart Mill says: "When the principle of making easy and interesting is pushed to the length of not requiring pupils to learn anything but what has been made easy and interesting, one of the *chief objects* of education is sacrificed." And further he says: "The new education, as it seems to me, is training up a race of men who will be incapable of doing anything which is disagreeable to them." Dr. Stearns predicts: "At no remote period a reaction will set in against this foolishness of teaching to which the developing methods lead, and, after the manner of reactions, will be likely to sweep away a good deal that is excellent with the mass of follies it will drive out."

I might multiply quotations from other eminent modern thinkers. No one can read the reports of recent state and national educational conventions without feeling that this pathological tendency of the new education is widely recognized. It is becoming necessary to warn teachers not to dilute the castor oil of difficulty with too much of the sweetness of method.

The old education at its best forced formulated knowledge on the child. A germ of good seed was planted by the apostles of the new education when they proposed to replace formalism by "thoughts that breathe and words that burn." But the new education, in the hands of its mistaken devotees, makes the teacher a variety show of "sounding brass and tinkling cymbal" and the child "pleased with a rattle and tickled with a splint."

William J. Desmond.

MILWAUKEE, WIS.

TOLSTOI'S ANNA KARENINA.

At the last meeting of the Reading Circle, I was requested to sketch Anna Karenina and its author. I do not feel that I can do either adequate justice, but for the purpose of calling attention to a field of literature but recently opened to English readers, I have gathered what information I could from the sources at my command. Aside from our slight geographical knowledge, Russia has been to us a *terra incognita*, —or a term nearly synomymous with despotism, nihilism, and gangs of state prisoners *en route* for Siberian mines. The able translations of the works of Gogol, Turgenief, and Tolstoi, are now opening up to us

the social and home-life of its people, and we are learning of their customs and manners, and the spirit which animates their every-day relations. Of Russian literature, the Boston *Traveler* says: "The demand for these Russian stories has but fairly begun: but it is a literary movement more wide-spread, more intense, than anything the country has probably seen within the past quarter of a century."

Anna Karenina is distinctly a Russian novel,—Russian scenes, life, and society, depicted by a Russian author. Its author, Count Lyof Tolstoi, stands in the front rank of Russian writers. Born in 1828, of noble and soldier ancestry, he lived until ten years of age on his paternal estate. In 1838 the family removed to Moscow, where, in 1843, he entered the university. Here he took up the study of Oriental languages, but in a year, exchanged that course for the law, which occupied his attention for two years more. He finally left the university without graduation and returned to the Tolstoi estate, where he remained until 1851. Inspired by a desire to see "new lands and new people," he entered the army and was sent to the region of the Caucasus. Here he remained three years, taking part in numerous expeditions, and enduring all the privations of a common soldier. When the Eastern war broke out, he was transferred, by his own request, to the army of the Danube, and took part in the defence of Sevastopol, earning rapid promption.

During his sojourn in the Caucasus, he began to write fiction. After the war he retired to private life, spending the summers on his estate and the winters in Moscow or St. Petersburg. These years were the period of his greatest literary activity. The emancipation of the serfs, in 1861, stirred his interest in economic questions, and he devoted his time and talents to the work of popular improvement,—the assimilation of the new elements, and the adjustment of society to the new condition of things. For more than ten years he published nothing but readers and spellers for the use of district schools. He is a humanitarian in its broadest sense. He has published many works, of which Anna Karenina is considered by many his best. It has been translated into French by an unknown author. The English translation is by Nathan Haskell Dole, and the spirit of the work, it is said, has suffered little in the change of language. In what I have to say of the novel, I have borrowed freely from such reviewers as W. D. Howells, the N. Y. *Critic*, and the *Nation*.

It is not a novel in the ordinary sense of the word,—not the development of a plot, with a beginning, middle and end. It is a succession of pictures,—of scenes. He paints life as it is,—light and shadow constantly intermingled. Our interest is increased by the contrast of the dull and the tragical elements. His finest characters have their weak points. We have in Anna Karenina two couples,—the central figures of the whole. One is Levin and his wife, Kitty, who marry for love, and do not forget it after marriage. Levin is "very good, very ordinary, very weak, and intensely jealous without cause. He is an honest gentleman-farmer, awkward, shy, detests society, is fond of his peasants, his dogs and horses,—is a warm friend, good neighbor, and capital shot." His translator inclines to the opinion that in the character of Levin, the author has portrayed himself. Kitty is very charming, very feminine, very pure. She and Levin are happy, and deserve to be.

The other couple, and the one we follow with most interest, are Anna Karenina and Vronsky; Anna,—lovely, intellectual and brilliant,—the highest type of a woman of the best society; Vronsky,—a man without a conscience. He is not a bold, scheming villain or social outlaw, but a correct man of the world, a brave and brilliant soldier, an accomplished courtier. He is essentially selfish, and knows no God but his own will. Anna is married to a high official, old enough to be her father, respectable, hard working, a rising statesman. But she cares nothing for him. She is a born rebel. Thrown by circumstances into the society of Vronsky, she is like a bird charmed by a serpent, and insensibly she yields to his power. When she realizes it, she is overwhelmed with surprise and horror. She tries to escape, but is drawn by slow degrees into the vortex of passion. She finally leaves her husband, defies law and society, and follows Vronsky.

No sooner has she sinned than expiation begins. "She is bad, but not bad enough." She tortures herself, and when she finally fathoms the selfishness of Vronsky, when she sees through the man who has destroyed her life, she feels like a child who must escape from some cruel tryant. She runs away, heedless where she goes. Hoping to meet Vronsky, she is disappointed. He is not there. The dark, brutal engine, more insensible even than the heart of a villain,—*is* there. Her measure of suffering is full, she can endure no more; the monster touches her and she dies.

There are many other characters, all of interest. We laugh at some and despise others. From a feeling of aversion for Anna's husband, who seems at first, a human iceberg, we grow to admire and like him for his patience, his forgiveness, his unostentatious tenderness. The story has a motive and a moral; the former, a contrast between love considered in its domestic aspect,—legal love, if we may call it so,—observed in family life, under ordinary circumstances,—and love as an uncontrollable passion, wild, lawless, and destructive of family affections and ties, of all social rules. The latter may be found in this: the code of morals which obtains in all society is not founded upon empty words. It is inspired by a higher law, and any violation of the law is inevitably followed by retribution. Anna and Vronsky found that they could not defy the law. The retribution followed, swift and sure. It may not always come, as to Vronsky, in loss of official and social position, or the remorse which must have followed upon the result of his wrong-doing; it may not come as to Anna, in the loss of home, husband, child, position and self-respect, or death beneath the grinding wheels of a locomotive; but in some form, it is not to be avoided. "The mills of the gods grind slowly," but the end is certain. In conclusion, I would say, read this and other works of the same class, for yourselves, and you will consider the time well-spent, and yourselves the gainers in true culture and information.

Annette C. Purdy.

APPLETON, WIS.

READING CIRCLE WORK—SIXTH MONTH.

ELEMENTARY COURSE.

PAGE. Read pages 279 to 319. HISTORY. Read pages 183 to 203. PHYSIOLOGY. Read chapters 14, 15 and 16.

ADVANCED COURSE.

QUICK. Read the accounts of Pestalozzianism and of Jacotot. The last half of page 186 contains the central truth of pestalozzianism; 190 and 191 are also of especial importance. The paradoxical form of Jacotot's teachings ought not to prevent the reader from seeing how exceedingly practical and pertinent they are. The maxim on page 210 should receive particular attention—it contains one of the great secrets

of *good* common school instruction. The summary for carrying out the principle given page 222 is a brief "manual of methods." Put it in practice in the school room and your work will certainly be fruitful.

FITCH. Read lectures VII. and VIII. The second relates to the teaching of foreign languages, and to many teachers will not prove especially interesting. But the first will amply make up for this in the practical value of its topics and suggestions, and may therefore occupy most of the time.

SULLY. Read chapters XI. and XII. The second is especially rich in its practical suggestions. It exposes the process of thought-formation, the relations of language to them, the processes of definition and division and their importance, and so on. Both of them are of the very highest value and suggestiveness.

POLITICS. Read chapters XXVIII. to XXXVI. These carry us through the preliminary topics which pertain to political economy, and open up the study of our institutions. The latter portion is especially adapted to presentation to grammar grade pupils, to whom it might properly be read and explained.

HISTORY. Read from page 520 to page 539.

LITERATURE. In BROOKE read to page 139. In SWINTON read pages 289 to 365.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

MUSCULAR SYSTEM.

STUDY OF THE ARM AND LOWER JAW IN MOTION.— OBJECTS OF THE LESSON: To fix the attention upon the facts that: 1. All motions of parts of the body, and of the body as a whole, are produced by muscles. 2. All muscles accomplish their results by pulling. 3. When a muscles pulls it becomes shorter, thicker and harder. 4. After a very short period of continuous action all muscles become wearied and ache. 5. Muscles are arranged in opposing sets. 6. Many muscles are connected with the parts they move by means of long tendons.

Grasping the flesh at the middle of the front side of the arm and bending the fore-arm, it is noticed that a mass of this flesh becomes harder, thicker and shorter, and that when the fore-arm is again extended this flesh resumes its former condition. It is further noticed that

with each repetition of the movements these changes occur in the same order. Grasping the fleshy part of the fore-arm, at the same time opening and closing the fingers vigorously, it will be noticed that changes similar to those already observed occur here. Placing the thumb upon the cheek, just above the angle of the lower jaw, the fore finger upon the temple, and shutting the teeth together firmly, a swelling in the two regions is observed, occurring with each effort to press the teeth together. Whoever has noticed a horse eating will recall the fact that in the pit above and a little to the outside of each eye there occurs a vigorous teetering of the skin, caused in the same manner as the swelling just observed in the region of the temple. If these exercises have been repeated vigorously there is now a sense of weariness in each region where the swelling has occurred. Muscles then in doing work become shorter, thicker, harder and fatigued. It will have been observed also that in each of these movements the muscles are so situated that they can only have done their work by pulling, and this is universally true; muscles always pull, they never push.

Bend the fore-arm at a right angle with the arm and grasp the flesh at the middle of the back of the arm while the fore-arm is again straightened. Now the flesh in this region shows by its movements that it is the muscle which produces motion, and that the work is done by a pull. The two motions of the fore-arm then are accompished by two muscles working opposite each other, and this is quite general throughout the body; wherever a part is moved in one direction there is usually a muscle or set of muscles to move it in the opposite direction, the only exceptions to this rule being found in those cases where some elastic tissue is stretched by a muscular pull and then regains its original condition when the muscle stretching it ceases to act.

The first muscle studied has been named the biceps. Where are the ends of this muscle attached? Press the middle and index fingers hard upon the inner angle of the elbow joint, at the same time using the biceps muscle. A hard cord is felt to slip beneath the skin under the fingers. Pass the fingers along this tendon toward the wrist. It can be traced but a short distance. With the fingers still upon the tendon rotate the hand, first palm down, then up. The tendon slips from under the fingers. Now grasp the biceps muscle again, at the same bending the fore-arm nearly at a right angle with the arm, and, while holding it there, rotate the hand as before. Notice that each time the palm

is brought toward the face the biceps become harder and thicker, showing that it is active in this movement. The biceps then must be attached to the radius or outer of the fore-arm bones, since, as we have found, it alone rotates. But how can the biceps, even it attached to the radius, act to turn the hand over? When the palm is up the tendon plainly leads to the upper side of the radius, where it is attached. Now turn the palm down. The radius must have made nearly a half revolution about its long axis, and the place where the tendon is attached is brought nearly on the under side of the radius. The tendon must then be partly wound around the radius, and this being the case, when the biceps contracts it would tend to roll the radius back and turn the palm up. Grasp the biceps muscle once more, holding the arm straight at the side with the palm open and facing forward. Now raise the arm at the shoulder to a horizontal position in front, keeping it straight. The biceps again hardens and swells, showing that it is instrumental in raising the arm from the shoulder, and that its upper end must be attached, not to the arm-bone, but to the shoulder, its attachments being at two points upon the shoulder blade.

EXAMINATION OF THE LEG OF A CHICKEN WITH THE SKIN REMOVED.—OBJECTS OF THE LESSON: To teach that: 1. Muscles are of some shade of red in color. 2. Muscles are surrounded by a thin, firm, transparent membrane. 3. Several muscles may lie in the same region, loosely held together by the investing membranes. 4. Muscles often end in long, inelastic tendons, by which they are connected with the parts they move.

The leg of almost any small vertebrate animal will answer as the basis of this lesson, but as chickens are so generally used as food it will not be difficult, by stating the want to the class a few days before the leg is needed, to secure one. The leg should be unjointed from the body, and the skin left on until near the time of the recitation, if possible. It will occupy a boy about three quarters of an hour to remove the skin to the ends of the toes, but, if it appears necessary that the leg should be prepared several hours before recitation, it may, after preparation, be wrapped in a wet towel until needed, to prevent drying.

Having removed the skin from the entire leg and foot without tearing the flesh, it will be noticed, first, that the red flesh which surrounds the thigh bone does not resemble a single continuous mass, but is marked off into regions, partly by faint, light lines, and partly by the way the

grain of the flesh runs. Similar appearances may be detected in the flesh of the lower leg. If the point of the knife is now inserted carefully into the flesh at one of the light lines, it will be seen that there is first cut through a thin transparent membrane, which may be peeled from the muscle; and, with a little care, it will be possible to partly separate the flesh into bundles without tearing or cutting the muscle proper. A very little patience will readily reveal as many as five muscles,—there are more—each wrapped in its own sheath and only loosely connected with its neighbors. Each muscle, thus isolated, can be brought into action without interfering with other muscles. Passing to the drum stick, the joint at the lower end of which answers to our heel, it will be seen here also that the flesh is bound up in large bundles, each of which represents a muscle. By tracing these bundles down toward the heel they will be observed to taper off, and finally to end in extremely tough and inelastic white cords called tendons, which pass over the joint and attach themselves to the bone below, or extend down into the toes. If the leg is shut up at the heel joint it will be seen that the toes close at the same time, and with a little trouble the tendons which cause the movement of the toes can be discovered, and also the arrangement of them by which the simple weight of the bird's body, while sitting, causes the toes to grasp the limb, and thus prevents the bird from falling from the perch when asleep. Just above the heel joint on the inside may be seen a tough, short, tendon like cord, under which the tendon of a large muscle plays like a cord through a pulley; this fulfills the office of a pulley, allowing the muscle to produce motion in one direction when it really moves in another; and such cases are common in the body. Examining this tendon as it slides through its loop, a fluid resembling the synovial fluid of joints will be seen, which is in reality like it, having a similar office and being secreted by a synovial membrane. Pinching the flesh at the knee joint of the chicken's leg, there will be felt a hard, small bone, which occupies the position of the knee-pan in our body. By examination it will be seen that one of the large thigh muscles is attached to this bone, while below it is secured to the leg bone by a very short tendon.

A PIECE OF BOILED LEAN MEAT.—OBJECTS OF THE LESSON: To teach that: 1. The muscles which move the skeleton are devisible into small portions, each of which is surrounded by a membrane. 2. The contracting elements of the skeleton muscles consist of lengthened fibers,

enclosed in delicate sheaths surrounded by net-work of fine blood-vessels, and having nerve-fibers attached to them.

When the muscle, or lean meat, is boiled it readily separates into small bundles, which extend lengthwise of the muscle. Each of these small bundles is divisible into still smaller ones, varying in length, according to Dr. Martin, from ⅓ to 1½ inches, and in diameter from 1-750th to 1-450th of an inch. These small fibers are the working elements of such muscles, and are closely wrapped in a transparent sheath, about which is a net-work of minute blood-vessels to convey to them the food and oxygen by which they are enabled to do their work. Attached to each also are the nerve-fibers, over which a motion of some sort is sent, and by which the muscle is made to contract when we so desire. The motion transmitted over the nerves to the muscle elements is not the source of the power which the muscle exerts, but serves simply to release that power, doing for the muscle what the hand of the engineer does for the steam-engine, when the valve is opened which admits the steam to the cylinder.

THE BREAST AND LEG MUSCLES OF A CHICKEN COMPARED.—OBJECTS OF THE LESSON: To teach that: 1. The blood sent to a muscle is proportional to the work it does. 2. A muscle but little used becomes incapacitated for great work.

The breast muscles of the domestic fowl, whose office is to move the wings, are very pale in color compared with those in the leg of the same bird. In any flying bird, however, the breast muscles are very dark. This difference of color is due quite largely to the fact that much more blood, relatively, is sent to the dark muscles than is sent to the lighter ones. We all know that domestic fowls are scarcely able to fly, and this is due partly to the fact that their bodies have become large in comparison with the size of their wings; but mainly to the fact that generations of comparative inactivity of the breast muscles have resulted in changing these muscles structurally, so that they are less perfect as such, and in the means of supplying blood to them. If we compare the continuous flight a prairie chicken can make with feeble effort of the barnyard fowl, we may realize how superior the breast muscles of the one are to those of the other, and how important a sufficient amount of exercise is to the maintenance of perfect muscles.

SURLOIN COMPARED WITH ROUND STEAK, AND THE FLESH OF A LABORING OX COMPARED WITH THAT OF A STALL-FED OX.—OB-

JECTS OF THE LESSON: To teach that: 1. Exercise makes the muscles tougher and stronger. 2. A period of inaction will cause the muscles to soften.

All are familiar with the fact that round steak is much tougher than surloin steak. This difference brings before us the fact that exercise has the effect of inducing a structural change in the muscles, making those most used toughest, hardest and strongest. Butchers have learned that an ox taken directly from the yoke makes very tough meat indeed, but that turning the same animal out to pasture for two or three months, or stall feeding him, will transform the tough, dry muscles into juicy, tender flesh. Such facts as these show the influence of exercise, and the need of it for the muscles of the body. It sometimes happens, as in club-foot, and in some cases of paralysis, that a muscle is left absolutely inactive; in such cases there is almost an entire disappearance of the contracting elements of the muscle, there being instead simply connective and fatty tissue. Physicians avoid this calamity, where there is hope of restoring the activity of the muscle, by causing the muscle to contract by means of electric currents thus giving the muscle the needed exercise.

THE PUPIL OF THE EYE.—OBJECTS OF THE LESSON. To teach that: 1. The size of the pupil is regulated by two sets of muscles. 2. Some muscles in our bodies are not directly under our control.

Let the members of the class number in twos, and the members of each couple face each other. Let each note carefully the size of the pupils of the eyes of the one facing him. After this let each member of the class make a cup with the two hands and cover his eyes so as to exclude as much light as possible, at the same time keeping the eyes open. After about thirty seconds uncover the eyes, and watch the change which occurs. At first the pupils are large, having increased in size since they were covered, then they gradually narrow to the original diameter; but the opening has been circular all the time. Bearing in mind now that all visible motions produced by parts of the body are due to the action of the muscles, and that muscles always pull and never push, it follows that one set of muscles, at least, must have acted in producing the two motions. As a matter of fact two sets have worked, one to make the pupils larger and one to make them smaller; they lie in the colored region of the eye, one set running out from the margin like the spokes of a wheel, and the other surrounding the pupil in the

form of rings. But these motions have been wholly unconscious, and if we try we shall find that we cannot alter the size of the pupil in any way, except by doing something which either varies the amount of light coming to the eye or by trying to look at something which, in order to see it distinctly, requires either more or less light. There are many other muscles in the body over which we have no direct control. Such are those in the stomach, heart and blood-vessels.

MEASURING THE TIME REQUIRED TO WEARY A MUSCLE.—OBJECTS OF THE LESSON: To teach that: 1. Every muscle, after a very short interval of action, requires an interval of rest. 2. Too protracted action weakens a muscle, and may even paralize it. 3. Muscles over which we have no control are most likely to be used too long at a time without our realizing it, and among these may be mentioned especially those in the ball of the eye.

All have tried the experiment of holding the arm extended horizontally from the shoulder as long as possible, and know that very soon severe pain in the muscles at work is felt. Let us investigate several muscles and see how long they can pull continuously without giving pain.

Tie a strong thread, about 44 inches long, to a small heavy weight, and suspend the weight where it can vibrate freely, with the string about 39 inches long below the support. Shorten or lengthen the string until the pendulum will swing to and fro just 60 times in a minute. Each swing of the pendulum then represents one second of time. Let each member of the class press his teeth firmly and steadily together, and at the same time count the ticks of the pendulum. Let each stop the pressing as soon as a sensible pain is felt, and sent down on a piece of paper the number of beats the pendulum has made. Clinch the fist tightly, and count steadily as before. Try other muscles in the same manner. A class of 49 trying five different sets of muscles gave a total average, for the 245 sets of muscles tested, of 62 seconds: the smallest individual average was 28 seconds, and the largest 104.

When it is understood that muscles require rest after a very short interval of action, it is evident that to persist in trying to read in either too little or too bright light forces one or the other of the sets of muscles which regulate the size of the pupil to prolonged action, which, if persisted in, may so weaken them as to make them unable to do their work properly. There are other muscles in the ball of the eye which, especially if one is either far or near sighted, are liable to be strained by

too continuous and too violent use. It is because each muscle requires rest after a short interval of action, that, while standing, we continually shift the weight first upon one foot and then upon the other; and it is in consequence of the same law that it is impossible for one to sit perfectly still long at a time. By moving even a little we change the burden from one set of muscles to another, and the needed rest is secured. Continually over-loading the stomach imposes too great labor upon another set of muscles. Some muscles too are over-worked when we eat a hearty meal just before retiring, because then the stomach falls upon other organs instead of hanging freely where its muscles can do their work easily.

MEASURING THE POWER OF THE BICEPS AND TRICEPS MUSCLES.—OBJECTS OF THE LESSON: To teach that: 1. Many of our muscles are extremely powerful organs. 2. The great power of many muscles is required in order that we may produce rapid motions. 3. Very rapid motions are secured through the aid of bones used as levers.

Mount a 30 inch hardwood ruler upon an upright standard, by means of a rather thick wire passing through the center of the ruler, so that the ruler turns freely upon the wire. If the two ends of the ruler do not balance, weight one end until the balance is secured. Hang a pound weight on the ruler just 12 inches from the wire, and apply the hook of a common spring balance to the under side of the ruler, just 2 inches from the wire, between it and the weight; now lift so as to balance the pound weight. The scales indicate that you are exerting a force of 6 lbs. Under these conditions 6 lbs. are required to balance 1 lb. When the biceps muscle bends the fore-arm so as to form a right angle with the arm, and the 1 lb. weight is held in the palm, the conditions are almost exactly as they were in the experiment; that is, the weight is six times the distance from the elbow that the place of attachment of the biceps is; and hence while holding the lb. weight it must be exerting a force of 6 lbs. Ascertain how heavy a load one can hold in the palm with the *fore-arm horizontal* and at right angles with the arm. The balance may be used to pull against or stones may be weighed in a pail. If 24 lbs. can be held, then the biceps is exerting a pull of 6x24 lbs. or 144 lbs. The pull this muscle exerts under these conditions is always very nearly six times the load lifted, whatever that may be. To measure the power of the triceps muscle, let a pupil stand directly behind another who is a little shorter, and rest his elbow light-

ly upon his shoulder, so that the fore-arm is *vertical* while the arm is *horizontal*, the hand holding the spring balance by the hook. Let a third pupil pull *horizontally* backward upon the balance, while the first opposes the pull by holding the arm rigid. I have seen the index repeatedly drawn down to 24 lbs.; and yet the place where the triceps is attached to the ulna is only about 1-20 or 1-24 the distance from the turning point at the elbow that the center of the palm is, and this means that the triceps muscle is capable of exerting a direct pull of from 20 to 24 times 24 lbs. or about a quarter of a ton.

These strong muscles are required, because the rate at which they can shorten is so slow compared with the velocity of some of the motions we are obliged to make that the only way these velocities can be secured is to put the muscles at the short end of levers. Some of the motions are required to be through so long a space, too, that if the motion were produced by the same amount of shortening in the muscle there would be no room for muscles of sufficient length to do the work.

F. H. King.

River Falls, Wis.

EDITORIAL.

We have great satisfaction in announcing that the committee of the Wisconsin Teachers' Association having the matter in charge has decided to open in Madison next July a Summer School for teachers. The plans are not yet completed, but they contemplate instruction, adapted to the needs of teachers in high schools especially, in several branches of science, probably botany, physics, physiology and chemistry at least; in the Latin language; and in methods and the psychology of teaching. Each of these branches will be presented with special reference to the work of the public schools, and by teachers of high attainments and long experience. They will aim to show not only what ought to be done in the schools but how to do it, and to afford such practical exercises and demonstrations as will render teachers more effective in their work. The term will open as soon as possible after the close of the National Educational Association, and continue for four weeks. Tuition will be made as low as possible, much lower than the absolute cost of the school, because it is desired that no teacher should fail of securing this assistance in his work from lack of ability to meet the expenses. The disposition is to fix the tuition at ten dollars for the full term and all the privileges of the school. This is a rare opportunity, and letters which have been received indicate that many of our best teachers are anxious to avail themselves of it. In Madison are extensive libraries and other

means of study which will be placed within the reach of members of the school, and the facilities for summer pleasures are not surpassed by any place in the West. Further details of the plans and expenses will be published as soon as possible.

A MEASURE has been introduced into the State Legislature appropriating three thousand dollars, or so much of it as may be needed, to meet the expenses incident to a proper and worthy representation of the educational work of Wisconsin in the exposition to be held this summer in connection with the meeting of the National Educational Association in Chicago. There seems good reason to believe that the bill will become a law. Several States have already made appropriations, some of them much larger than this, for their own representation. Moreover, Wisconsin has not, up to this time, made such an exposition, in connection with the National Association, as properly shows the strength, variety and resourcefulness of her common school system. When the Association met at Madison we were absorbed with our responsibilities as hosts, and with that effort to make the gathering a success financially and in numbers which resulted so much to our credit. The two meetings since that time have been remote from us and excited only moderate interest. This year the Association comes again close to our borders. It will be almost as accessible to Wisconsin teachers as if it were held within the State, while, being relieved of the responsibility of entertainers, we may now reasonably be expected to contribute to the interest and value of the gathering by fairly exhibiting the work and resources of our schools. If this is to be done, something more will be necessary than an appropriation by the Legislature. The teachers of the State will have to cooperate heartily with the committee appointed by our Association, giving time and labor freely to prepare and forward materials for the exposition. Already several schools have outlined plans and begun to accumulate and make ready materials. Just as soon as possible, after the appropriation is granted by the Legislature, the committee will issue circulars of instruction and suggestions, to which we bespeak an immediate and hearty response from the schools. Meantime school principals and teachers can foresee in a measure what is likely to be of interest and what they can contribute, so that preparations need not be delayed until the circular is issued. "Unless we can be represented worthily we do not wish to be represented at all" is the common sentiment on this subject, and we can be represented worthily only by the earnest and thoughtful co operation of the teachers and superintendents and schools of the State.

TENSION is necessary to a good recitation. There must be a fair degree of strain, of exertion, in order that it may be really interesting and profitable. What dull, dreary, sleepy, performances some recitations are, forms gone through with by teacher and pupils from a sense of duty! They are worthless and even injurious. They serve to weaken in the pupil the natural love of exertion, which is the chief source of worth in them. Exertion is pleasurable—every game, every rush and shout at recess, proclaims this. Apathy, listlessness,

indifference—they are tolerable, but not pleasurable. Now the recitation that drops to this level is only tolerable to the pupils—and is tolerable only for a time. How very significant, then, is the mere suggestion that boys leave school because the love of exertion in them is not satisfied; they are restrained, repressed, reduced to hum-drum: and therefore they leave. When they are stimulated, roused to emulation, made to strain so that their cheeks flush and their eyes flash, then they enjoy themselves. Over-work—there is not much danger of it where reliance is placed upon natural motives, upon interest and love of doing. Where unnatural methods are resorted to,—over-examinations, marking, rote learning, dry-as-dust processes,—there is great danger of it. But the recitation that keeps on the *qui vive*, that sweeps ahead to a definite purpose, that gives the athlete a chance to show himself and the weak boy also an opportunity to do successfully something worthy of himself; the recitation that makes a half hour seem like five minutes, and leaves the class eager for more, and sure that only lack of time prevented them from achieving a grand success, —that recitation educates. It develops strength. It produces sound knowledge. It makes the pupil master of himself. Exercises which fall below the level of the pupil's powers, and fail to secure a fair measure of tension on his part are worthless—may we not say, are mischievous?

In the County Superintendents' meeting at Madison the opinion was expressed that the teaching in the district schools of what is known as "Constitutions" is so dry, feeble and ineffective that the abolition of the study would not be a loss to the communities. This appeared to be the prevalent view among the superintendents. The matter seems to us deserving of serious consideration. This study is the only one in which the duties of citizenship are brought to the attention of the pupils. It is attempted only in a few of the schools, and then only with a few of the elder pupils; but it is certainly possible to make it interesting and profitable to those who take it, and productive of some good in the minds of the larger number who are only casual listeners. What is lacking is efficient teaching, and something may be done to supply this through the Institutes, or else the Institutes are not so valuable an agency for the improvement of the schools as they have been supposed to be. Manifestly the teachers do not know what to teach or how to teach it, and we venture the opinion that up to the present time the Institutes have done very little to help them in these respects. The usual Institute exercises in this subject is not a model of what should be attempted in the schools. It is apt to be either a minute examination and discussion of some sections of the constitution, or a test of the teachers' knowledge of the details of the instrument. It is, in short, a review or examination upon the constitution. Now what is wanted is help towards teaching this subject properly. The pupils in these schools should acquire some knowledge of the general organization of our government, the relations of its parts, and the manner in which it is made to reflect the will of the people. It should be brought into close relations with elections, courts, officials, whatever else they

are familiar with in daily life which will be made more significant to them by means of the study. The Institute does not fulfil its whole duty unless it helps the teachers to recognize these things, shows them how to deal with the subject so as to secure the results, indicates what points need to be emphasized and what to be passed over lightly, in short teaches them how to deal with the study in the ordinary district school. Two weeks is a very short time in which to accomplish all this, and we do not anticipate any sudden improvement from the Institute work; but a conductor who has himself mastered the problem thoroughly and in detail certainly ought to be able in two weeks to give some useful plans and suggestions to the teachers. It is clearly necessary to take some efficient measures to improve this instruction, or to abolish it from the schools; unless we can suppose that the superintendents are mistaken in their judgment as to the character of the teaching at present. There is a further suggestion. It was said that the unprofitableness of this instruction is in large part due to the mechanical and unproductive way in which the branch is taught in the high schools. We have not space to comment upon this now. It seems to us to afford evidence of the need of effective agitation on the teaching of civics in the public schools.

THERE is ground for inquiry whether, on the whole, our district schools have not fallen off in effectiveness, instead of gaining as they ought to have done during the last twenty-five years. If the data were at hand for a careful comparison should we not find such unpleasant facts as these? The larger pupils, and especially the boys, have greatly fallen off in numbers. The winter schools used to gather in a number of young men and young women, who were perhaps studying higher arithmetic, or book-keeping, or general history, who served at least to give tone to the school and elevate the ideals of the boys and girls as to what then had yet to learn. If we enquire where are such boys and girls now, we shall find some of them are at home, having finished their schooling; a few have gone to the neighboring village or city to school. Those at home "are not going any more to that infant school," and the others left with the same impression. What has wrought this change? First, the teachers of these schools are younger than they were twenty-five years ago. More than that, they are for the most part young women. If they know books as well as, or better than their predecessors, they have not equal weight of character; they are not able to influence older and stronger minds as their predecessors were; their work is trivial incomparison, fanciful, unsteady, formally right perhaps, but without the deeper significance. Some of the older teachers in district schools were men of mature mind and excellent judgment: some of them were college students, earnest men who showed that they knew what education was worth by toiling to secure advantages for themselves, and therefore capable of affecting the ideals of other boys—college students are now rarely found teaching district schools, and the loss of them is certainly greatly to be regretted. Where these changes have

come about they are the result of a variety of causes—great changes in social and business life,—but we wish to call attention especially to two. The wonderful development of graded schools is the first: and this has operated to draw away pupils from the rural districts, and on the other hand to furnish a constantly increasing number of comparatively young persons who are able to secure teachers' certificates. In the second place the wages of district school teachers have not advanced in proportion with the advance in other occupations. The The discussion of the mill tax calls attention again to the fact that the inhabitants of cities pay the smallest school tax and get the best schools. This is a result of aggregation of property and population. The rural schools need, and on the whole are justly intitled to, the additional help which comes to them from the new tax. An opportunity is thus offered to secure better teachers and thus to improve their character. Have the ideals so far declined that the opportunity for improvement will be lost? In how many will the cheapest teachers still be sought, and the older pupils thus be effectively driven out or kept out of the schools?

OUR DRAWER.

ARE THEY GIRL'S SCHOOLS?

MR. EDITOR: Permit a reader, who understands you to accept in a qualified way Superintendent Klemm's statement, that "the methods of teaching in the higher grades of intermediate schools as well as in the high schools, are designed for and shaped according to the needs and wants of the girls and not the boys," to ask in what way the "needs and wants" of the girls in our public schools differ from the "needs and wants" of the boys? The discussion seems to imply that the boys are held back by the girls, and that their "strong desire for exertion and application of their powers" is repressed because there are girls in the class. Now, Mr. Editor, does your own observation and experience confirm this? Is it time that the girls are a clog to the classes? Are they stupid, feeble and lazy, as a rule? Are they not, on the contrary, usually at the head of the class? I venture the opinion that two boys leave school because they cannot keep up with the girls to every one who leaves because the girls keep him back. The matter can be easily tested. Ask the teachers of any half-dozen of our schools—and confine the question to "male teachers" if you choose—to testify as to the average scholarship of the boys and the girls in their classes, and I feel sure that at least four out of the six will testify that the girls take the lead. * * * Further, I am skeptical as to this "strong desire for exertion and application of his powers" in the average boy, at least as related to school work. Some of us would be happier if that desire "materialized" a little more readily. We toil hard to call it out, and are obliged to conclude that our effort is like "calling spirits from the vasty deep." * * No,

Mr. Editor, the testimony from the field will not show that the feeble and laggard girls are so thwarting the noble and irrepressible "desire for exertion and the application of their powers" on the part of the boys that the latter are compelled in disgust to abandon their cherished ambition for further culture, and betake themselves to something worthy of their powers. M. L.

A WRITER in *Education* from Erie, Penn., discussing Supt. Klemm's answer, says: "I fear he has over-estimated the power of the masculine element to hold the American boy to his books. A metropolitan school for boys, whose members have had the full advantage of male instructors before and after entrance, makes the following showing: Of an enrollment of 1141, there were 'left or dropped' 424 in less than five months; at the end of the year, of the 1141 but 652 remained. The lowest class, 726 in number, became 347 in five months, and 339 at the end of the year,—a falling of 53.3 per cent. This is about the way the boys have been held for years, though under the care and instruction of a well paid and well qualified corps of teachers. A school of the same kind, but not grading quite so high, in another city, presents this educational pyramid: Highest class 32, lowest 173, on the plan of half-year classes; the two lowest classes number 300, the two highest 74. These illustrations are not drawn from schools suffering from inexperience and financial weakness. They are the evolution of considerable time and much money."

THE NO RECESS PLAN.

Would it be advisable to dispense with our present plan of having recesses of fifteen minutes each, in our city and country schools, during the cold season of the year, and substitute therefor a five minute whispering recess?

G.

Recess serves two chief ends: (1) It allows the children to escape for a brief period in the middle of each session from the confined air of the school room. If our school rooms were properly ventilated this would not be a matter of so much importance, but in the actual condition of them it seems of great value. Not only do the pupils go out of doors, but by their going out and returning the air in the room is partially renewed. (2) The recess also affords opportunity to work off the nervous energy which accumulates very rapidly in young persons, and makes the quiet and silence of the school room very trying to them. If they can run and shout for a few moments in the midst of the session they find great relief, and after so doing are able to apply themselves more quietly to their work. By abandoning recess we shall materially increase the nervous strain of the school upon both teachers and pupils. The whispering recess very obviously fails to accomplish the two ends specified, and is therefore a very poor substitute. The second might be accomplished in a measure at least by a vigorous calesthenic drill; and if during this the air in the school room should be thoroughly changed, and then a whispering recess of a few moments should be

allowed, so that pupils could move about freely while the temperature is becoming warm again, we should have a partial substitute for the regular recess. The management of the change of air so that it should be effective and yet not injurious to any of the pupils, would require considerable intelligence and skill.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

THE motto of Lord Clyde's life, always inscribed upon the fly-leaf of his pocket memorandrun-book, says: "By means of patience, common sense, and time, impossibilities become possible."

WE have visited a school which has a set of valuable scrapbooks, one for history, one for natural history. Each child brings in whatever he finds that he thinks valuable, a committee of the class read and pass judgment upon its reliability and permanent worth, and the teacher passes final judgment before it is inserted. The interest of the class is great, while the good to the pupils in their reading, to the committee, to the class in the use of books, is inestimable. The time taken is less than would be supposed.

THERE is probably nothing which more determines the deportment and general spirit of a school than the bearing of the teacher, as seen by the pupils from day to day. Decorous teacher, decorous pupils; careless and untidy teacher, indifferent and unseemly pupils. If the teacher is industrious and honest in his work, the pupils will be apt to have the same spirit. If the teacher be reckless and indolent, the pupils may seem to be industrious, but it will be in the wrong direction. If a teacher, careless of bodily posture, allows himself to lounge, prop himself up on his chair, sit on top of desks, etc., the pupils will be very likely to imitate his example. If the teacher is orderly and careful to respect the laws of the school, the pupils are apt to be orderly and respectful of rules, and so on.—*Student.*

How self-reliant is the pupil? That should be the teacher's main question. The great scientists of England told the biologist who quizzed them, that they attributed their success to third-rate teachers, for these obliged them often to plod their weary way alone. Solitude is better for thought than society, and the modest, uncommunicative teacher behind the desk is not the worst enemy, by any means, the child can have. The great weakness in our schools to-day is the tendency to glitter and show. The teacher—mercurial, impulsive, sensitive as a magnet—is impatient with the hesitancy of youth, and so lifts the child over every obstacle and sets him down in easy places.

SOME TEACHING DEVICES.

1. IN HISTORY.—A good method for review in the study of history or geography, is to let the pupils write a brief sketch of a person or place on the slate or on paper. At class time the pupil will read his sketch as called upon by the teacher, after which the class, as they are able to call to mind the person or place, will raise the hand, and by a signal from the teacher, will speak it. Here are some examples from the school room. The sketches are by grammar grade pupils and the answers in brackets at the close came from the class to whom the sketches were read:

I. The person I am describing was one of the most famous generals of his time. In 1742 he received his commission as ensign, and sometime later he became a captain. About nine years later he was advanced to the rank of major general, and with a company of 9,000 men he started for Canada. On June 26th he landed his forces and succeeded in reaching Quebec, where the French general, sorely against his will, was forced to risk decision of the struggle on a battle in open field. Quebec was captured a few days after. He was killed. Ans. [General Wolf.]

II. The person I am describing was very bold and brave, and New England was named by him. He had led a life of wonderful adventure. In one of his expeditions he was captured by the Indians and carried before their chief. He was condemned to death but was saved by the chief's daughter. Ans. [John Smith.]

III. The man I am describing was born in Italy in 1436. He was an Italian, but he sailed under the service of Spain. He was sent out to find a passage, by water, from Europe to Asia. At the time he started out the shape of Africa was not known. He made several very important voyages, one of which resulted in the discovery of a new hemisphere. He died in the sixteenth century. His remains are now in a cathedral at Havana. Ans. [Christopher Columbus.]

2. IN ARITHMETIC.—The following was placed upon the blackboard: "Two men together bought ½ a section of land at $10 an acre. They fenced it for a pasture, paying $1 a rod for the fencing."

I copy one of the papers given me by the teacher, but prepared by the pupils; as follows:

1. How many acres of land did the two men buy?
2. What was the total cash for the land?
3. How much did each pay?
4. How many miles of fence did it take to inclose the land?
5. How many rods?
6. What was the total cost of fencing?
7. What was the total cost of fencing to each man?
8. What was the cost to each man for land and fencing?
9. How much more did the land cost than the fencing?
10. *What part* of the whole cost was the cost of the fence?

The class seemed to enjoy this work.

A CLASS of problems that one superintendent has all the children perfected in: Buy 12 apples at 2 for 3 cents, and give a half dollar in payment. How much change? ringing all the changes liable to present themselves in real life. It is a good mental exercise.

3. IN PRIMARY READING.—The "Word Game" is played in this way. A pile of small cards on which words are printed is placed in the centre of the table. The child who can tell correctly the most words on the cards until the centre pile is gone is the victor this time. But one word is given at a time. If the child does not know the word given him, the card is put back in the centre pile and another given.

I tried the plan and found it useful for several reasons. Other ideas were also suggested by it. Instead of using printed words, I wrote the words that had occurred in the reading lessons on little slips of paper. If, however, a teacher prefers the printed words, it seems to me that the most inexpensive way would be to buy a reader and cut it up. I keep my words in envelopes.

Recognizing numbers to one hundred may be taught in the same way; and, in this case, the child failing to answer may himself make the number on the board after he has learned it.

At the close of the exercise, each child counts his slips of paper and the one who gets seven knows he beats because seven is more than one, two, three, four, five, six. It was surprising to me to find that at first my youngest division were unable to tell who was the victor.

Perphaps the original idea, *a game*, may be lost in this *work*.— *Popular Educator.*

4. BULLETIN BOARDS.—In several of the schools which *Reporter* has visited, he found bulletin boards on which were written some of the important telegraphic reports, as gleaned from the paper of the preceding day. In this way, not only the history class, but the whole school were alive to the current news. Questions concerning certain topics were made the special order for the five minutes before school closed, and the knowledge thus acquired aided materially in making these pupils able to converse on something besides the gossip of the day.—*School Reporter.*

MAP STUDY IN GEOGRAPHY.

Prof. H. Wagner in his address before the second German Geographical Congress declared that "The extensive study of the Map is the central point of all Geographical teaching." Dr. H. Oberlander of the Grimma Teachers' Seminary, writes, "What the pupil can himself *read* from the map, and what he can *infer* from a *study* of it the the teacher should not tell him. He must rather by his questions lead the pupil to express his knowledge. Through *analytical* questions the teacher must guide the pupil to describe, upon the basis of the map, the horizontal and the vertical forms of a land, its hydrography and its to-

pography. Through *developing* questions he should lead him to determine the climate, productions, etc., as a result of the natural features." Matzat in a passage too long for quotation says in substance that the study of regions outside the home begins when the pupil has acquired the power to read maps. The process consists in the pupil studying the geographical objects on the wall hand and map and framing his own descriptions of them. The description is at first guided by the teacher's questions, but as the pupil learns the *what* and the *how* of map reading he must be required to work more and more independently. The verbal expression is a sign for the teacher that the pupil has the geographical concept in his mind—a still further and more positive proof being the power to *represent* what has been observed and described.

An attempt will now be made to apply these ideas to a concrete example—North America. It is premised that a good wall map hangs in view of the class—a map which by either drawing or coloring shows not only topography but also the distribution of highlands and lowlands and the altitude and character of the mountains. Any map that does not do this has no place in the school room. Under the conditions stated, let us proceed to read the map of North America.

1. EXPLANATION OF MAP. What it represents. Origin of name America. Why *North* America? (Refer to globe—which should be present at every lesson—for answer to this question and the two following.) In which Hemisphere reckoned from the Equator? In which from Meridian of Ferro?

2. PROJECTION LINES. In what direction do the parallels of Latitude curve? How then must East and West be determined? Find Meridian of 97° West from Greenwich or 20° West from Washington. In what direction does it extend? In what direction the Meridians West of it? East of it? What rule must we observe in judging of directions North, South? What angle does the Meridian of 90° West from Greenwich make with the parallels of Latitude? Why are the parallels drawn in curved lines?

3. POSITION. *a*. Relative position. Position of Home found on Map of N. A. and on Globe. Pupils mark this position with a small cross upon their hand maps. Find the most northern point of N. A. How far from the Home? Measure with scale of miles. How many degrees between the Home and this point? Proceed similarly with S., W. E. points of N. A.

b. Absolute position. Latitude and longitude of N. point of N. A. (Boothia Peninsula). What parallel runs south of it? (70° N.) What parallel N. of it? (80° N.). Take the space between 70° N. and N. point of Boothia with dividers or on a strip of paper and see how many times it is contained between 70° N. and 80° N. (*about* 5 times). How many degrees then is N. point of Boothia N. of parallel of 70° N.? (Two degrees). What then is the Latitude of most northern point of N. A.? (72° N. Lat.) Proceed similarly with Longitude. Repeat with S., W. and E. points of N. A.

4. BOUNDARIES. This needs no illustration.

5. COAST LINE. Find Strait that joins the Arctic Ocean to the Pacific Ocean.

Name? Find the must easterly point of N. A. Name? Direction of coast from Behring Strait to Belle Isle Strait? Length measured with scale of miles. Starting from Behring Str., what do we first pass? (A Bay). Name? (Kotzebue Sd). What next? (A Cape). Name? (Lisburne). Next? (A Cape.) Name? (Barrow). Next? A River Mouth (Colville), another River Mouth (Mackenzie). A Cape (Bathurst). A Strait (Union). A Bay (Cornation). A River Mouth (Coppermine), etc., etc. Treat remaining coasts in the same manner.

6. FORM. How many Oceans bound N. A.? How long is its N. E. coast? How wide at its most southern part? (Runs to a point). What form then has N. A.? (Triangular).

This triangular form is sometimes called the *stem* or *trunk* of the continent; the Peninsulas and Islands the *branches*. What shape is the continental stem of N. A.?

7. PENINSULAS. Read from map in same order as coast.

8. ISLANDS. What body of water lies N. of N. A. and W. of 97° W. from Greenwich? (Melville Sound). How many Straits lead out of it? Name them —first S.—then W.—N.—E. What is this Sound surrounded by? (Islands). How many? Name them beginning W. of McClintock Channel and passing N. E. and S. Other islands treated in a similar manner. If more islands are mentioned than the teacher thinks it desirable to have learned he will indicate upon the Wall Map those that he wishes to be remembered.

9. DIMENSIONS. Measure on map length of each side of triangular form. Compute area of triangle by known rule. Compare with area given in book. Whence the difference? (allowance made for projections and indentions). Measure length of N. A. on 97° W. from Greenwich. On 87° W. On 107° W. From Behring Strait to Isthmus Panama, from Strait of Belle Isle to Cape St. Lucas. Width on 50° N. On 70° N. On 40° N. On 30° N. On 10° N. From Cape Hatteras to San Francisco Bay. From Delaware Bay to Cape Mendocino —Strait of Belle Isle to Gulf of Georgia. How long would it take a train traveling forty miles an hour to pass over each of these distances?

10. RELIEF. Teacher explains that the green coloring indicates lowland—the lighter the color the higher the land. The buff color indicates highland. White is the region of perpetual snow. (In recent German maps brown tints are used throughout—the darker the higher. On the whole this is to be preferred.) Meanings of terms Lowland and Highland. What parts of N. A. show Lowland? What parts Highland? How many Lowlands do you see? Names given as "Lowland Mackenzie River."—"Hudson's Bay Lowland," etc. How many Highlands? Names given as "Arctic-Highland"—"Western Highland"—"Eastern Highland." What connects E. and W. Highland? (Highland N. of St. Lawrence system). Name given. What connects Laurentian Heights with Arctic Highland? The distribution of Highlands and Lowlands being studied a special study is made of each. The Eastern Highland may serve as an example. Direction (S. W. to N. E). Position of S. W. example. Of N. E. Of what composed. (Mountains in centre—plateaus W.—terraces E.)

Name of the Mountains. River Valleys within the system. What Rivers in longitudinal valleys? What transverse valleys? In the Western Highland attention would be called to the arrangement of the mountains on its west side, diverging to include the valleys of Sacramento and San Joaquin — uniting at Mt. Shasta and again diverging. In the Rocky Mountain system the difference in character between its southern, central and northern portions would be noted. So also the plateau region between the Rocky and the Coast systems and the Great Plains E. of the Rockies. Similarly the Highlands of Central America and of Mexico would be noted as divisions of the Western Highland to be more fully studied when these countries are taken up. It will be noted that the features of Relief, that belong together are studied together. Thus not all the Mountains of N. A. first and then all the Valleys and next the Plateaus, but rather first the distribution of Highlands and Lowlands, next, each of these separately; but in each studying together features that belong together in nature. Thus in Asia after tracing the disposition of Lowlands and Highlands we might take up the special study of the great central Highland. Its extent from the Mediterranean to the Pacific would first be noted — its increase in width from W. to E. — the contraction in the vicinity of 75° E. and 35° N. forming two divisions, eastern and western. Next we might take the Eastern Highland — study its extent E. and W., N. and S. — its nearly triangular form — note and describe the mountains of its N., E. and S. margins — the mountains crossing its interior and the divisions (as Soongaria, Thibet, etc.) thus orginating. Then, if desirable (as would be the case say with the Himalaya Mountains), special study would be made of each of these bordering mountains, divisions, etc.

So again if the topic were that part of the central European Highland lying N. of the Alps and between the Rhine and the March, first would be noted the existence of three divisions meeting in the Fichtel Mts. — the Swiss-Bavarian Plateau, the Franconian Basin, the Bohemian Basin. Next each in turn would be studied as to position, form, boundary mountains, rivers, etc.

In brief the object in view is to develop in the pupil's mind a picture of the country studied that will never leave him, and a sense of the interdependence of related geographical features. — *Abridged from the Popular Educator.*

SOME PROBLEMS IN ARITHMETIC.

1. A person bought a plank containing 76 square feet, which was 1 foot, 7 inches wide. How long was the plank?

2. A man bought a horse and carriage. The horse cost 3-5 as much as the carriage, and both together cost $640. What was the cost of each?

3. At a certain election the successful candidate had a majority of 120, which was 1-9 of all the votes cast for hinself. How many votes were cast in all?

4. When a man was married he was three times as old as his wife; but fifteen years afterward he was only twice as old. How old was he when he was married?

5. A and B traded with equal sums of money. A gained a sum equal to 1-5 of his stock; B lost $220 and then had half as much as A. What was the original stock?

6. A man after spending $40 more than 3-5 of his money had $60 less than 3-7 of it left. How much money had he at first?

7. A man agrees to execute a contract in 60 days, and places 30 men on the work. At the end of 48 days the job is but half completed. How many men must he employ the rest of the time to fulfill his contract?

8. A man bought ⅓ of a vessel and sold 4-5 of his share for $11,700, which was 30 per cent. above cost. What was the cost of the vessel?

9. If a quantity of bread will last 1,500 men for 12 weeks, at the rate of 20 ounces per day for each man, how long will the same bread last 2,500 men, at the rate of 16 ounces per day for each man?

10. Bought a horse for $4,500, and paid $500 in cash and the balance in eight equal annual instalments. What is is the mean time for paying the balance?

OUR BOOK TABLE.

DEWEY'S PSYCHOLOGY.

PSYCHOLOGY, by John Dewey, New York: Harper Bros., 427 pp.

The great change which has come about in the study of psychology in the last twenty years is fairly well reflected in this volume. That change is the result of the interaction of different schools of thought, and of the development of physical science, many of the methods of which it is now sought to apply to the study of mind. In one respect Prof. Dewey has not followed the modern movement. That aims to separate psychology from metaphysics and the general problems of philosophy, and to confine it to the scientific study of mind. Two considerations lead the author to abondon this plan; that the writer's philosophy will inevitably affect the psychology, coloring all interpretation of the phenomena of mind; and that American usage makes this branch an introduction to philosophical studies, for which position it is on the whole well suited. We find, therefore, some treatment of topics belonging to logic, ethics, æsthetics and metaphysics. The work is, however, strongly influenced by foreign, and particularly German, studies, and presents to the American reader a brief, clear and admirable introduction to this field of study as now prosecuted. The bibliographical references at the close of each chapter, which are quite full and well classified, make the work still more serviceable in this particular.

Although the author presents many of the results of the physiological school of psychologists, his sympathies are not with them. He does not even attempt to give a general view of the physiological basis of mind, but affirms definitely that "physiological psychology cannot aid psychology directly." With the

comparative method he has more sympathy, although only, in his view, of incidental use. The method of introspection is the real method of the science, and he only occasionally and briefly departs from this. It results that his presentation is more abstract than is necessary, and gives to the beginner in philosophical studies no basis of external facts and observations by means of which to steady himself. The introductory chapters, moreover, deal with the general relations of the subject, and consequently with broad philosophical principles, which the beginner will not easily grasp, and of which he will not appreciate the relevancy. There is, however, in the general treatment of the subject a breadth, and cogency, and terseness, which take strong hold upon the reader. The author has a way of suddenly turning a subject round so as to place it in a new light, which greatly increases its suggestiveness; and his brief and lucid presentation even of very abstract themes gives to the reader a sense of the richness of the matter dealt with, which goes far to make up for the want of a more objective treatment. In short, Prof. Dewey's book seems to us able, broad, and fresh, a very valuable addition to American text-books on this subject.

He has not developed in the text the bearings of the topics on pedagogy, but in the bibliography are abundant references to German and some English works in which this phase of them is treated.

—PHYSIOLOGICAL BOTANY, by Robert Bentley, (D. Appleton & Co., 202 pp.) is the latest addition to that admirable series, Appleton's Science Text-books. It is an abridgment of the author's larger work, and designed as a sequel to Miss Youman's "Descriptive Botany." That was observational, dealing with parts readily examined by the learner. This pursues the descriptive, plan as it deals with the structure of plants which is not readily examined by young learners nor without a microscope. Its author has had thirty year's experience as teacher of this branch in King's College, London, and has produced a work which, though simple and comparatively brief, is believed to be a satisfactory presentation of all which it is necessary for the student to learn as a foundation for advanced study.

—THE ELEMENTS OF CHEMISTRY, by Ira Remsen, (Henry Holt & Co., New York; 272 pp.) is a text-book for beginners, prepared by one who is a distinguished master of the science. Its plan is very simple and the treatment clear and attractive. Chemical theories are kept in a subordinate place that the pupil may become familiar with the facts of the subject and the methods by which these facts are learned. The author thinks that great harm may be done by forcing these upon the mind of the pupil before he is prepared to receive them, and that the work of the teacher should be such as will develop sound minds and beget a genuine interest in natural phenomena. His suggestions as to the proper way of doing this are excellent.

—A SECOND READER, by J. H. Stickney, (Ginn & Co., 248 pp.) is in appearance and general plan like the author's First Reader. He repudiates the idea

of making such a book to embrace a limited vocabulary, as destroying the charm of free writing. His selections are from writers of acknowledged merit, suited in subject and style to children of this grade, and long enough to admit of artistic treatment and genuine interest. Many excellent teaching devices are suggested in the volume.

—DUTTON'S ANALYTICAL BOOK-KEEPING CHART, (The Office Co., 205 Broadway, New York.; price $1.00), presents an analysis of the definitions and principles of Book-Keeping in tabular form so as to exhibit an analysis of the whole subject. Each kind of business does not have separate principles. The common laws of business transactions are so exhibited as to greatly facilitate the learning of them and their applications.

—MATHEMATICAL TEACHING, by T. H. Safford, is the last issue in D. C. Heath & Co.'s Monographs on Education, (25c.) It presents a brief resume of the history of mathematical teaching in this country, and a sketch of methods in all branches of the science, from primary arithmetic to the calculus.

—A TREATISE ON SURVEYING, comprising the Theory and the Practice, by William M. Gillespie, (D. Appleton & Co.) is an old and valuable work greatly enlarged and improved by Cady Staley, Ph. D. Its treatment is both remarkably full and remarkably simple and clear, the author having aimed to produce a book which should be easy for the young student, or the practical man of limited education, and also lay a foundation broad enough for the professional student. The book has grown up from school room needs, having been gradually developed into its present form by the wants of the author's classes. It covers land surveying, leveling, topography, triangular surveying, hydrographical surveying and mining surveying. The appendix furnishes a brief synopsis of Plane Trigonometry, and all the tables necessary for the work. It is very complete and is published in a very attractive and serviceable style.

—PRIMARY LESSONS IN LANGUAGE AND COMPOSITION, by W. H. Maxwell, (A. S. Barnes & Co., 35c.) is built upon the theory that description is not the most natural exercise in expression for young people. Narration is always more pleasing, and through narration, or the writing of stories, they may most easily be lead on to descriptions. This first book avoids grammar teaching, makes systematic use of pictures as the basis for compositions, and provides for oral as well as written drill in expression. Its author is associate superintendent of the Brooklyn Schools, and the book is the outcome of his extended observation and experience. It is beautifully illustrated and printed, and contains some very choice selections of prose and verse for second and third reader pupils.

—CONKLIN'S HANDY MANUAL OF USEFUL INFORMATION, (Geo. W. Ogilvie, 215 Lake St., Chicago; 85 cts.) contains a large amount of miscellaneous useful information, and many valuable tables.

—NEW MUSIC. Oliver Ditson & Co., Boston, have just issued "Is It Forever?" a beautiful song by Barri, (35 cts.); "If Love Were What The Rose Is," an appropriate setting of Swinburne's poem; music by Stevens, (25 cts.); a translation of an ancient student's song, dated back to the 12th century, en-

titled "Dulce Est Desipere" (Sweet Is Folly), a song that will please college boys, (30 cts.); and the piano pieces: "Sheperd's Song," a choice little piece for beginners, by Behr, (25 cts.); "Charm of Spring," by Reynald, a beautiful and showy composition which good players will like, (40 cts.); and "Brindisi," another brilliant piece, by Ludovic, (40 cts.).

MAGAZINES AND PAMPHLETS.

—The *Century* Magazine is especially strong in its serial papers of permanent value. Of course the authorized Life of Lincoln is the chief of these, and has awakened wide interest. Hardly second are Prof. Atkinson's striking statistical studies of The Relative Strength and Weakness of Nations. If these two were not running we should turn first to Prof. Langley's "The New Astronomy,', which in the February number treats of the stars. In fiction Cable and Stockton take the lead. Besides these this number contains a delightful sketch of the Bahamas, a paper on Father Taylor the Bethel preacher; an admirable one, with portait, on Dr. McCosh; an account of Recent Discoveries of Works of Art in Rome, and other attractive articles. It well deserves the popularity which it has achieved.

—One finds in the March *Atlantic* a distinct flavor of its earliest days. James Russell Lowell delighted us in February with his "Credidimus Jovem Regnare" which had the ring of some of his best work in it. It sets off with this dainty touch:

> "Oh happy days, when men received
> From sire to son what all believed,
> And left the other world in bliss,
> Contented with bedeviling this."

His Fancy or Fact, in the March number, is much shorter but not less attractive. And next we turn to Oliver Wendell Holmes, who begins an account of his recent trip abroad, called "Our Hundred Days." Mr. Perkins' Theophile Gautier is a charming critique; Agnes Repplier's Curiosities of Criticism shows us how time reverses the judgments of the shrewdest, and Mr. Lawton's Hippolytos of Euripides so vividly describes the tragedy that the reader seems to himself almost to have witnessed it. There are other excellent critiques, The Lady from Maine is one of the cleverest short stories we have seen in a long time, the serials are good, and the whole number full of vivid interest.

—*Education* for February opens with Causing to Learn, by Gen. T. J. Morgan; Prof. Mowry discusses the The True Order of Topics in Teaching Physics; Mr. Bergen, High School Physiology Teaching; Mr. Richardson, How Should Examinations be Conducted; and Mr. Carpenter, of Boston *Advertiser*, Journalism as a Profession. The usual miscellany rounds out an interesting number.

—*The Swiss Cross* is the title of the new monthly magazine issued in the interest of the Agassiz Association and edited by its president, Mr. H. H. Ballard. Two numbers are before us and they are filled with interesting scientific

reading, popular in character but up to the times and fresh. The magazine will prove a treasure to any intelligent youth with a taste for science; $1.50 per year; published by N. D. C. Hodges, 47 Lafayette Place, N. Y.

—Supt. B. A. Hinsdale's *Report of the Cleveland Public Schools*, contains, besides the report, several valuable papers discussing educational topics, Reading and Language Work, Pressure and Strain on Pupils, President Eliot on Public School Problems, etc.

—*Common School Education* is a new monthly issued by the editor of *Education*. Its name indicates its limitation to elementary teaching, and it aims to be practical and helpful. The first number contains articles by Dr. W. T. Harris, N. A. Calkins, Larkin Dunton, B. A. Hinsdale and others, 35 pp. $1.00 per year.

—*Vick's Floral Guide* is always a welcome visitor, the first indication that summer is really approaching. It is as usual profusely illustrated and contains a fund of useful information for the amateur gardner. His *Monthly Magazine* will quicken or create an interest in flowers and the garden in any one who is so fortunate as to have it to read. James Vick, Rochester, N. Y.

—*The Study of Music in the Public Schools*, is the last circular of information of the Bureau of Education.

—Dorman B. Eaton has prepared a pamphlet on *Secret Sessions of the Senate*, their Origin, their Motive, their Object, and their Effect, which presents a very strong argument against their continuance.

—Teachers will find Prof. Wm. James' article on The Laws of Habit, in the *Popular Science Monthly* for February very valuable to them. It is an admirable presentation of the modern views on this subject, so vitally important in education. The number has other articles of great interest. None of the publications which come to our table, and which are not specially devoted to education, contain during a year so many articles of value to those interested in teaching as this monthly.

—Ivison, Blakeman & Co. have issued a very attractive program of the National Department of Superintendence, which meets in Washington, March 15. It is an eight page pamphlet in ancient parchment style with rough edges.

—Potter, Ainsworth & Co. have dissolved partnership, and formed a new firm under the style of Potter, Ainsworth, Knight & Co.

NEWS AND NOTES.

—We record with sincere sorrow the sudden death of Miss Carrie Harvey, and add our testimonial of her gentleness, devotion and worth to the following tribute, which we are requested to publish by those who were associated with her: "In the death of Miss Carrie Harvey, we, the teachers of the Fourteenth District school, feel that the school has lost a kind, conscientious, valued teacher, and that we as individuals miss from among us, an esteemed

friend; one whose character was as lovely, as unpretentious, as true as it was deep. Her work among us gave evidence of the unselfish character which was pre-eminently hers. The good of her pupils was her first consideration, and no labor which seemed likely to result in their benefit, was too hard for her to undertake. In all her relations here she seemed desirous of finding the best way and of patiently pursuing it. To the friends of a longer time, we offer that sympathy which we so sincerely feel.

MARGARET E. CONKLIN,
GERTRUDE BINNEY,
ELIZABETH WOOSTER.
Committee.

—Mr. F. S. Belden, who represents Cowperthwait & Co., in Chicago, expects to remove sometime in March from his present location, 153 Wabash Avenue, to a more commodious office at 184 Wabash Avenue, to which the friends of education are cordially invited when they visit the city.

—The primary grades of Second district schools are to have lessons in needlework every Friday afternoon. Boys and girls take hold of the work with enthusiasm and the parents are pleased with the arrangement.

—The Hillsborough high school has commenced putting in a reading library for the benefit of its students, by the investment of the proceeds of a recent entertainment given by the school.

—We bring together here a sentence or two from the published reports of several County Superintendents: perhaps they may be made suggestive by collection. Adams county: "Many of our district boards fail to manifest any interest in their schools beyond employing teachers and putting them to work." Calumet county: "In other districts patrons and officers seem to be satisfied to support a school merely for the purpose of meeting the demands of the statute, a lamentable fact but easily accounted for. These people have no ideas of what a teacher should be; they have never seen good teaching, and therefore the poorest teacher is satisfactory to them, if school is kept at the proper time and no trouble caused." Clark county: "Most school boards are too busy to give much definite attention to school work." Dane county: "They (school boards) do not often inspect the school to see what is really being done, but quiet their consciences by blaming the teacher and superintendent if things are not as they should be." Dunn county: "Interest in education as manifested by our school boards is on the increase; many, however, are yet indifferent to the needs of our schools." Green county: "In many districts the members of the school board never visit the school or inquire into its workings. They seem to think that when they have employed any kind of a teacher, and made such other arrangements as absolute necessity may demand, they have fully discharged all the duties of their office." We leave to the reader to make his own inferences as to the character of the schools, the value of the school officers, and the merits of the system which places power in such hands.

—The Elkhorn high school class in civil government has been for a time organized into a Congress, for the purpose of making themselves more familiar with the Parliamentary rules and the working of Congress. They were divided into the two bodies—the Senate and the House of Representatives—each house having its respective officers, committees, etc. Bills were introduced by the members of each house, which passed through the regular process of law-making. One bill

on the subject of raising the tariff was introduced which was discussed by the class as a Committee of the Whole. The discussion lasted for several days, and the pupils seemed to take a lively interest in the subject.

—The libraries of the five normal schools contain 6,498 volumes exclusive of text-books. The Milwaukee school has 500 volumes, and each of the others not far from 1500. They are extensively used by the pupils, and constitute one of the most valuable teaching instruments in the schools.

—The report of President Evans of Normal Board shows the satisfactory growth of the schools under their charge. "Twenty years ago," he says, "Wisconsin organized its first normal school with a faculty of five teachers and a total enrollment of 210 pupils for the first year. Of these 99 only were normal students. The statistics of the five schools for the year just closed show a total enrollment of 68 teachers and 2,119 pupils, 1,131 of these being in the training departments." This is a satisfactory exhibit of growth, and indicates the usefulness of these schools. President Evans says: "The attendance has now reached the maximum seating capacity of three of the schools, and the regents feel warranted in raising the standard for admission to the normal departments." In fact three of the schools are over-crowded, and the policy thus indicated is clearly called for by existing conditions.

—There are two suggestions in the last report of Supt. Lyons, of Fond du Lac county, which seem to us of wide application and great importance. He finds that in the last decade school population has declined, wages have not advanced, the instruction has fallen into the hands of a younger class of teachers, and nearly all the advanced pupils have been withdrawn. "With a reduced school population, and a materially reduced school attendance; with the growing indifference to common schools that naturally obtains with the increasing wealth of a community, and the consequent withdrawal of all the older scholars that give life and character to a school, we have the same organization we had fifteen years ago. While in the natural order of things, our district schools have degenerated into small primaries and intermediates, we have neglected to supply the upper grades, leaving the high and normal schools to claim and take annually the "firstlings of our flock." In the Oshkosh normal school alone there were ninety of our best scholars enrolled during the last school year, nearly all of whom were under the maximum of legal school age. Neither have we any positions to reward the faithfulness or efficiency of teachers, and the result is a perpetual apprenticeship to the service. As soon as our teachers advance to proficiency in the work they are taken from us by offers of better schools and higher wages elsewhere. With this constant and systematic elimination of our best teachers and our best pupils—the prime conditions of good schools—how is permanent progress possible? Anticipating this state of things, as well it might, the State has provided a remedy in the enactment of the Free High School and Township System laws, but we have not taken advantage of them, and we pay the penalty."

—The second suggestion relates to the notoriously inefficient and corrupt way in which school boards discharge their duties. "Do you not know," he says to the supervisors, "that in your own towns teachers are hired on the flimsiest of pretexts—on the plea of

being a "brother's or a neighbor's daughter," "the first that applied," or, worse still, under the pernicious auction method with its immoral practice of underbidding, where it is a foregone conclusion that not the fittest but the most unfit will survive. An intelligent and conscientious discharge of the affairs of the district is the first and most urgent want of our schools, and as aids to this end we welcome women just enfranchised to this work, and tell them at the threshold that here is indeed a fruitful field for missionary labor." We have been long denouncing the abuses of official position here mentioned, and still they go on. Will the vote of the women help to correct them by punishing at the polls every officer who lends himself to such practices? The report has its words of encouragement, although our extracts show only the dark side.

—The bill making second grade certificates good for two years instead of one, and first grade good for four years has passed the Assembly and seems likely to become a law.

—Gov. Rusk has appointed the following members of the Board of Regents of the State University: George Raymer, of Madison; Hiram Smith, of Sheboygan Falls; George Kœppen, of Milwaukee; and W. P. Bartlett, of Eau Claire.

—The Sauk County Agricultural Association has made arrangements for an educational exhibit in connection with their annual fair. The circular of Superintendent Wiswall indicates four departments, each provided with appropriate premiums. They are: natural history collections of not less than ten native specimens, including plants, insects, birds, minerals and ores, fossils and relics, and woods—all mounted and labelled; penmanship and drawing; kindergarten work; and declamations, songs, etc.

—The last regular meeting of the Hillsborough Teacher's Association was held at Hillsborough on Saturday, Feb. 19. The meetings of this association have been noted for their successful gatherings during the past three years; but no previous meeting was so well attended and showed so much enthusiasm in the general discussions. One hundred and twenty-five attended.

—There is reason for satisfaction over the decisive vote by which the effort to repeal the mill tax was defeated in the Assembly. There will now be opportunity to give the measure fair trial before it is condemned, and we do not doubt that experience will show it to be one of the most beneficial acts in favor of public schools which has been passed of late years.

—Reading Circles are springing up rapidly in Jackson county under the inspiration of Supt. Hoskins. Circles have been organized in the following places, No. 1, Merrillan, A. W. Burton, Leader; No. 2, Melrose, Ella Forbes; No. 3, Black River Falls, Rebecca Darnall; No. 4, Alma Center, W. L. Watson; No. 5, York, Retta Smith. The total membership of these five circles is 35. Three teachers are pursuing the course alone. The outlook is encouraging.

—The school at Waterloo, of which O. W. Jack is principal, is raising funds for a library, and has already made a good beginning.

—Nineteen county Institutes are appointed for this spring, all but two of which will be managed by the regular conductors from the Normal Schools.

—Mr. T. E. Addy, of Janesville, has presented to the high school of that city a valuable collection of geological, zoological and botanical specimens.

—A late number of the Portland *Oregonian* contains a vigorous argument in favor of Normal Schools written by Miss Kate T. N. Tupper, formerly teacher in the Whitewater Normal School, now employed in the public schools of Portland. It is addressed to the chairman of the Legislative committee on education, and consists of answers to a series of questions propounded by him.

—Institutes for city teachers have been very successful and profitable. One was held at Ashland, Feb. 4 and 5, by Prof. Harvey—the first Institute, we believe, in that part of the State. The enrollment reached twenty-six, and all the teachers of the vicinity were gathered in. The exercises which they presented showed careful preparation and the earnestness of purpose on the part of all was very gratifying. Prof. Harvey lectured Friday evening to an audience of between three and four hundred. At Madison, Feb. 18 and 19, Prof. Hutton found the high school room hardly large enough to hold the teachers who gathered for the Institute. The exercises were very earnest, and the more interesting from the active part taken in them by prominent citizens. At Eau Claire, Feb. 25 and 26, a vigorous and interesting session was held. The final Institute of this kind for the season will be held at Watertown, March 4 and 5.

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THE DUTY OF THE STATE IN EDUCATIONAL WORK.

An ancient inquirer once asked: "What shall I do to be saved?" The inquiry is by no means obsolete in its pertinence, for it is a standing question of all times and places where there is anything to do, to know, or to achieve, in this inchoate, contingent world—the answer hidden in the inquiry itself. "Believe in the normal method of knowing, doing and achieving, and work out salvation in accordance therewith." It is emphatically the way of the state, the church, the school, and of every institution and function in the economy of a progressive civilization. And such is the answer, too.

I am asked to speak to-night somewhat on the relation of the state to public education, or more specifically to the common public school as we now have it. So that, precedent thereto, some legitimate conception of the idea of the state itself, its nature, its purpose, will be in order. What is the state? Whence comes it? and what end is it designed to conserve?

Is the state made, or is it born? Is it to be regarded as a social compart or contract, or as a social development? Does it arise as the result of a grand structure of laws, rules, traditions, codified and set forth by some *ex cathedra* fiat, rightly demanding the people's allegiance? or, does not the state rather come forth from the people themselves, a natural product, legitimately born of the genius of their life? In a word is not the state an organic expression of man, or humanity in some of its deepest, broadest, and most enduring instincts and affinities? Nay, verily, thus we regard the state, or nation—a vital *natus*, a birth, a growth, a living soul, to will and to do a divine service. Like the fam-

ily, it stands in the divine order of the world. Its justification lies in the unities, affinities, aspirations, and the fulfilment of the ultimate social purposes of our race in time. It is in this broader mold of things that the one and the many stand in co-ordinate relations, and exercise reciprocal functions; even as the vine and the branches, or the body and its members—a living, harmonious, abiding totality. So that, in our popular view of political science, the state can never become an accidental mass or aggregate of heterogeneous materials, arising from mere juxtaposition. Such may be a mob, but not a state. The state stands forth as no provisional confederacy, indeed, holding its constitution and dissolution by the same tenure. It is no scheme of economic convenience or profit, on the basis of partnership, or even of "popular sovereignty." The root of the matter is not here. On the contrary, there *is* a sovereignty, absolute and ultimate as human nature itself, in which the state, like all of us, "lives and moves and has its being." And it is in the light of this high sanction that vandal hands laid upon the state become sacrilegious. When we say that it is in the provisions of this higher sovereignty that lie the state and all the social fortunes of our human world, the truth is more than a conventional platitude. There is great regulative vigor in it. Such has been the verdict of the wisest, profoundest, and most philosophic thinkers and statesmen of all time. The state to them has been a *divine idea*, a living, abiding, conscious, personal being. Such, too, has been the verdict of experience, where state fortunes have recorded the forgetfulness of this truth. The state idea is the integral thread of all history, the millennial mold, in which humanity shall present that triumphal kingdom that has ever lain in her dream. Yes, tribes perish; dynasties rise and fall; policies change, while generations come and go; but the *state* goes on forever.

And now, if we have touched bottom here, equally fundamental, in its character is the idea of the *school*. The state and the school live and grow together. Their origin and necessity are in the same source. They are mutually dependent, reciprocally active, organically conservative, generating and integrating the one commonwealth which is the great common need. Torn asunder (and with special emphasis may it be said in our American civilization), divorced, both languish, and like a dismembered body, perish eventually.

The practical value of education in its general sense, of course, needs no comment. But continuing on the thread of our thought thus far in-

dicated, the question in a popular goverment like our own, a government by the people and for the people, of the relation of the state to its public schools ought to seem plain and practical. The state being *of* the people, born of its life, fed and sustained by the life and character of this popular constituency, it follows that as is this life-blood so must be the health and condition of the body; if pure, the whole system is robust, thrifty and vigorous, able to resist attack from without or within —if impure, the whole body becomes diseased. It becomes weak from functional derangement: internal disorders ensue. Cramps, convulsions, threats of violence, anarchical spasms, and symptoms of general paralysis, are only too evident. If too long uncorrected, suicide is the end. Now if the state had a right to be, to care for itself, provision for its safety and practical efficiency is not only a natural right, but a sacred duty. Self-preservation is a primal law, and individually imperative. No less true is it of a community. The political regency that "provideth not for its own household is worse then an infidel." It is suicide,—and suicide is crime.

And here pursuing the line of our main theme—the relation of the state to schools—we come directly upon the important matter of *citizenship*. As is the citizen, so is the civic constitution. He it is that creates, and grades the status of the body politic. There is the quarry from which the building material is drawn in all great measures of public edification. If the iron and the timber is sound, the structure is substantial. The reason why in state, municipal, and other civil enterprises, we have so many rickety political shanties is that we have too many political jobbers, "Budenseiks" builders, putting in "Budenseick" material. This is true not only in New York but even here, where citizenship is at a discount. We have a great deal of it that is hastily made; largely imported citizenship, and always tariff free. The state is responsible for this. If it produces or allows a cheap, spurious kind, it cannot marvel that the creature scoffs in the face, and scorns the prerogative of the creator. Citizenship is a boon of inestimable value, and it is a sorry day in a republic when it is so cheapened that the political hucksters can trade in it. Citizenship should be earned, and it should be made to cost just what it is worth. If a native born American has to serve three times as long for the right to cast a ballot, as Jacob did for his wife, shall an alien be led at once to the bridal altar of American citizenship, while the speech of Ashdod is still on his lips? Republics

have rocks ahead as well as other governments; this is not indeed a sunken rock, but up and clear above the waves,—yes, above the breakers. There is a cry abroad in the land for more voting: the truth is, there is too much voting already. *Quality*, not quantity, is the crying need.

The two great enemies of popular government are *ignorance* and *vice*. These are the old enemies that have beleaguered man, as man, from the beginning. No political sagacity can entirely elude them; no form or function of institutions can escape their hostile invasion: they climb up to the crown and hide beneath the altar, and nothing but eternal vigilance can repress, or vanquish these ubiquitous foes. Considering what they did at the outset, we may well applaud the political sagacity of the wise men who were at the evening and the morning of the first day of our national genesis. They planted the school in, and by, and for the state. They kindled the altar for the conscience. Prosperity or adversity has made our records as we have been true or derelict, to the principles of the far-seeing fathers.

We are looking, for the time, at the relation of the school and the state in the line of *applied education*, or knowledge and politics in the concrete. Political power in the hands of a blind, incompetent populace, unscrupulous,—fanatical often, is political solecism. It is like the storm managing a rudderless ship. Such are always available as followers, or stock material to be operated by the "bosses," the easy tools of demagogues, agitators, cranks, and political filibusters of all stripes, in formenting and carrying on their schemes of anarchy, plunder, and political deviltry generally; bad enough in absolute governments, but most of all in one like our own, where ignorance and fanaticism may go forth with a ballot in one hand and a torch in the other, and be the political equal of the most enlightened patriot in the land. Such possibilities ought not to be, of course, but if they *are*, their remedy should be well understood, prompt, pertinent, and affectively applied.

As to the extent and general character of the education the state should furnish and insist upon, the curriculum in the public schools, is doubtless, as far as it goes, satisfactory: I say generally. The great unquestioned *dictum* is—the state must educate its people. This is imperative, because the public school as a state measure is one with the state itself, in its organic life. They stand or fall together. The friend of one is always the friend of the other,—while the foe to either is the

foe to both. Political science tells us that if republics are to live they must live in the *light;* while enmity to republican institutions knows very well that its surest weapon against such institutions is *darkness.* Destroy the public schools of the country, or allow their force to be abated by any class or clanish substitution, and the beginning of the end is at hand. Eliminate, as an organic function of the state, or of modern civilization, this army of workers whose life and enthusiasm make the occasion of this evening, withdraw the light of their shining from the public sky, the leaven of their spiritual quickening from the great popular lamp of the land, and that sky will begin very soon to be overcast, and premonitory symptoms of gathering storm and confusion will fill the air.

But, fellow citizens, this vision is not going to materialize. Schools are to live. The public school-master is abroad in the land, and he is here to stay. Patriotism has just fought one battle in self-defense, and put under its feet forever an ancient imported foe; and patriotism can fight other battles, if necessary. And till all foes to our public schools, whether imported or domestic, are well and forever under foot, American patriotism will be sleeplessly vigilant, judicially jealous, resting on her arms. Possibly it may seem out of place to cry "wolf" in this connection, and to be dramatizing Don Quixotic battles: and yet, our free popular institutions have no more subtle, silent, untiring hostility, to guard against, than opposition to our public schools. "Thrice armed is he," always, "who hath his quarrel just." We are not dreaming of defeat, only estimating the cost of victory.

Our civilization is becoming more and more complex daily. The free institutions, and general political hospitality of the land, are very inviting to all who have been kept on short allowance all their lives, in every part of the world. Our gates are wide open, east, west, north and south, and the bidding goes forth to enter in and find asylum and plenty. The inrolling multitudes that annually seek our shores, modify, essentially, the general character of our population, especially in cities. They all come with their inherited ideas and biases, but every one with a very clear and decided conviction that this is the land of the free, and that the special blessing of freedom is: that every one can do whatsoever he feels inclined to do, without let or hindrance from any one else. If there is any exception to this foreign idea of freedom, it is where any one may possibly feel disinclined to do as he pleases, in which case the law is expected to step in and compel him. There are, of course,

noble exceptions to this foreign idea of American liberty, of which Americans are proud, but the general character of the imported article, is as has been indicated. They all vote, of course, almost, apparently, before the fragrance of the steerage is off,—ignorant of our institutions, quite likely social or political Ishmælites to a certain extent, and yet clothed at once with a power, by their votes, that makes them the political equals of the enlightened veterans of the land. This ought not so to be. Our twenty years of native born apprenticeship counts for nothing against the alien of one or five. Here is a fact that must ere long be attended to, and that will tax the wisdom of the best statesmanship. Foreigners themselves begin to feel the inconsistency of our present practice in this very matter, and only the other day a petition was presented in the Senate by Mr. Spooner, from intelligent Germans in Milwaukee, praying that the naturalization laws may be changed to a more equitable standard.

And yet, with all the drawbacks from the influx of foreign population, it is well not to forget that there is an element, rightly managed, of great value in it. Owing to this very mingling of ethnic diversities, there arises the possibility of a manhood broader, richer, more vigorous and enduring, than could come from the persistent homogeneousness of any simple ethnic line. And, of course, a great question is: how to assimilate, harmonize, and appropriate this fresh, raw, imported material, so that it shall be truly American, and yet not cease to be itself.

And here we come upon one of the most vital points of contact in the relation of the state to the school? Shall we not all agree that on the whole, the solution of this problem lies greatly *in the line of the public schools?* It takes about a generation to effect any great moral or social change. Grow and outgrow is the order of all life and living institutions. Catch, then, that portion of the foreign element which is nearest the cradle, and put it into the public schools. Mix it in with these transforming and Americanizing institutions. Childhood and youth are susceptible. Scatter the pollen of our blooming civilization, upon the opening flower of the alien stalk, and when once so fertilized, the fruit shall be as if indigenous. Every child of foreign birth needs to be born again before he is truly naturalized. The public schools are schools of regeneration. Is it any secret why they have arch foes? Aside from text-book tuition, the silent, penetrating, all pervasive in-

fluence ever at work there transforms unconsciously the German, Scandinavian, and even the Polish child, till this youth finally goes forth from the school made substantially anew, with sympathies, biases, and aspirations entirely in accord with the little community he has lived and loved in, because he was one of them. That is, he has entered on the road, and gotten a good start in true citizenship. He will be likely to know how to vote, certainly to read his ballot; and if the flag of the nation should receive insult, he would be among the first to reclaim its honor. There is nothing so good to cure clanishness, provincialisms, and fictitious distinctions, as mixing together. It is good even in religion. Antipathies, antagonisms, that make the world a scene of hostile camps, melt away by intermingling and common acquaintance.

And right here, in the line of the state's duty to education, may it not be pertinent to suggest the introduction into our public schools of text-books on the elementary principles of the government under which we live, brief lessons that shall call the attention of the pupils to the great fundamental ideas and duties of true citizenship? This could come in very appropriately in connection with the history of the country, and would constitute a very desirable outfit for real responsibilities ahead. It would seem as important that boys should be taught in these things, as to be told that the product of the sum and difference of two quanties is equal to their squares; or that oxygen and hydrogen constitute water; or that Jupiter has four moons and Saturn seven. All these are matters of first importance, of course, in their place. But our point is: is it not well to make our public schools a seed time for coming harvests, in fields which must be actually worked? to charge the young and quick mind with seminal potencies that shall appear in a well balanced manhood in *all* relations of life, when the time comes for doing? The curriculum of the public schools is already enlarging. Here and there we find the elementary principles of physiology and biology taught. "Know thyself" was a word from the profoundest wisdom of ancient life. Self-ignorance is too often the mother of suicide. A knowledge of the house we live in, its divine domestic economy, is the only way out of some of the sins and sloughs we are trying to wade through today, and blessed are the people who can make the public school their hygienic Moses to lead them out of bondage to the promised land.

The public school as an American institution has a special fitness for predetermining American life, in its broad, complex and multiform

phases. It is so because it makes "the child the father of the man," as neither home nor church can do it. Consequently it becomes incumbent upon the state, even upon the church and home themselves, to endow largely, foster and furnish amply the public school with means commensurate with its opportunity and ability for good.

Ah! yes, says some whisper, possibly, shall the state be *taxed* for all this? Certainly. For every child that is made the father of a better man, the state gets the benefit: every tax-payer becomes the beneficiary of every ray of enlightenment shot into the community in which he lives, no matter whether it be his own child or his neighbor's that is edcated. Community is one; co-operate enlightenment is co-operate health and wealth. Nay, bachelors and rich spinisters can make no surer investments than in tax levies for the education of children they never heard of.

But, conceding this, possibly a demurrer may not be unexpected to the question: Shall the state support the *high school also?* And why not? Already it is supporting a graded system from the spelling book to the university. The high school meets a want in the state not otherwise provided for. It is but one step in the ladder of ascent. If the state would keep up the vital continuity unbroken of the graded system, the high school is as essential, as vital, as the primary or grammar school. The truth is, from the "three R's" to that orchestral key that sings the harmony of worlds, it is the glory of the American state to open the way, with unstinted invitation to all to enter and ascend who will. The scholars and educators of a land have always been its pride, its renown and crown of honor. For every advanced stage of enlightenment the state creates, there comes rolling back to it a benefit, exceeding, a hundred fold, the cost of it. The graded system should culminate in a high school in every community having the standard requisite of population. And to give proper completeness and crowning finish to the ascending hierarchy of enlightenment, a grand *National University* should be established and supported from the national exchequer, where scholars of leisure and eminence may prosecute, uninterrupted by environing perturbations, the higher range of science and culture. And this should stand, in lofty pre-eminence, as America's "Statue of Liberty, Enlightening the World." This doubtless will come in time: we may not be here to see it, but it will be honorable to have been in the order of its coming.

But, in justification of the old proverb that extremes sometimes meet, we will descend from the university to the *kindergarten*, and ask if the state shall foster this? Let us ask also if this is not in the grade? If there is a top is there not a bottom? It is just as true right along as it ever was, that "as the twig is bent the tree's inclined." This is the philosophy of the kindergarten. And because the twig is easily bent, it is also easily broken, or given an unskillful twist, that may result in a deformed tree that is not only unseemly, but useless. Many a man is spoiled for all life by false, blundering treatment in childhood. The irrepressible nature of childhood yields to the slightest touch. And if in bad, unsympathetic atmosphere, subject to cross, crabbed voices, looks and actions, the disposition may be so spoiled that the curse will be evident down to the latest years of age. The genius that is fit to handle childhood, in its first tuition, is rare. It is not always found in homes, otherwise models. Consequently it is submitted, that the kindergarten may well come into the special order of the public schools, for which the state may exercise its most careful supervision, and more especially in selecting the gardners.

Again, is there any place for *manual training?* Shall this branch of education come into the public schools? This, we understand, is a debatable matter, with strong attorneys on either side. But the hand is a great faculty — we all know this. We could not do without it so well as we could do without the eye, the ear or the voice. The hand is the master tool in turning matter to the uses of mind; the main agent upon which the body depends for food, raiment and shelter. Shall we not have manual dexterity as well? Every boy and girl should have mastery over the adaptability of this most versatile and willing servant, so as to say do this, and it is done, do that and the word becomes the deed.

We do not propose to indicate the specific course to be pursued in manual training in schools, should this be included. The accepted demand of the thing, as essential to a more practical completeness of school education, will bring the method of it. Possibly there is a latent wisdom in reserve which will speak, when the time comes, and tell the state that it may find itself greatly responsible for the industry of the land, and that as a matter of pure political science, the head, the hand, the conscience and the appetite, must live and work together in harmony.

And here, touching the conscience, we find ourselves close upon the question of *morality*, or ethics. Shall the state undertake responsiblity for the morals of the people? It is said we cannot legislate a community into virtue, make men and women honest, truthful, just and honorable by statute. And so it is. Passing an act that a man shall not steal, cheat, lie or get drunk, will not put a stop to such evils. And yet good laws are wholesome, and so essential that without them evil would soon have full swing. But as to the question whether it is incumbent upon the state to entertain the matter of ethics or morals at all in connection with the public schools, I think there is hardly room for debate. Not in text-book form should the tuition come; and yet this little kingdom, the school room, should be marked by the most high-toned morality conceivable. The atmosphere of school rooms should be so pure that no lie can live therein; so clear, that deceit, falseness, nor guile of any sort can hide from view in it. Every pupil should be made to feel, and to feel it with pride, that as a member of this little commonwealth, the school, any stain, or shadow of crookedness on his part as an individual, is equally a blot on the good name of the whole institution. The boy or girl who will do wrong and try to cover it up so that the teacher need not know it, is a sneak! to refuse frankly to confess a wrong is to be a coward. This high code of morals may be introduced and maintained in every school, and the question is, how to do it? Not entirely by rules, regulations and penal statutes. Rules and regulations are essential in their place. But rules are mechanical, and provisional. The good and bad alike can follow them. The law that is *life*, the creative power in the school room, that makes one a law unto himself, is the *personal dynamics of the teacher*. His, or her silent, vital, contagious force of personal character, is like climate which converts the dull clod and torpid bulb in the earth into bloom and fragrance, and sweet fruitage. This living, personal force it is that creates the public sentiment of the school room, which generates character, and shapes and controls all the more absolutely because unconscious. Here is the text-book on morality, the penetrating, all-pervading power of the personal influence of the life-giving teacher. This creates the morality, and enthrones the code of honor in the school room.

Yes, emphatically, yes, teach a high *morality* in the public schools if anywhere. By no means omit this. Not from books published by Appleton or Lippincott do the lessons come. The book is a living book.

Its lessons are inspirations, enthusiasms, honor, reverence and love. The land is full of these living and life-giving books. Their price is not named, for they are above price. And it should be the first and most sacred duty of the state to seek these out at any price, and fill the public schools full of them. Infinitely more than what the text-books give is the awakening, stimulating, and creative force emanating from the living personality of the advanced teacher.

And now comes *religion*. Shall the state, through, or in, the public school teach religion? I think we may, at any rate, say this: that the state—or wherever the authority may have its seat—may justly require that the schools shall *not* be *irreligious*; for the same reason that it may require that they shall not be *immoral*. But, so far as direct instruction is concerned, the way is clear that it shall consist in no dogmatic or scholastic matter. No text-books of any creed, sect, school, or church have any place in a public school. Those matters which people quarrel about, which break up the world into discordant factions, must be strictly avoided. The tendency of unadulterated religion is: to bring the world together, to foster peace, harmony, good will, and universal brotherhood. But that so-called religion which leads men to live together as cats and dogs do, so that if a Calvinist, for instance, happen to espy a heretic across the street, his back goes up at sight; or if an Armenian or a Free Thinker meets a Trinitarian, their lips draw back, and all signs indicate business,—all this kind of religion should be as far from the public school as the east from the west. It is bad enough in the church. When we see men cultivating a bad spirit, back biting each other and calling each other bad names for "Jesus sake," we need not wonder that scoffers and the ungodly stand and mock in public, while religion weeps in secret. Saintliness is always beautiful, and charity divine, reverence is exalting, and love is ennobling, and nowhere more in place than in the school room. Pure religion is contagious: touch but the hem of its garment and you begin to believe again, though no word be spoke or sign made. There is a young wonder born in every child's soul as it begins to wake beneath the touch of this world's marvelous fingers; and if then, the fresh, eager vision can be filled by light from some kindling, saintly soul, a celestial day has been born. The mission of every teacher is a divine mission. What we claim is, that the schools be pure and lofty in ethical and spiritual significance. Simple capacity, or grade of faculty, will never put a soul on the way to its high-

est and best, but a *passion* for the highest and best will do this. As it was in morality, so in religion, the personality of the teacher, his or her personal presence, spirit, life and force of character, should be the religious text-book in the school.

It has been apparent, of couse, that in considering the relation of education and the state, my paper has proceeded quite as much upon what the public schools can do for the state as upon what that can do for them. That is, aside from the patronage which the state ought to extend to the public school as the educator of the people, the state in this very support discharges a duty it owes to itself as well. For, only as the state becomes responsible for its own citizenship, can it expect to endure and accomplish its work as a social and political power. History is starred with the graves of nations. The iron hand of kingly power may hold together inorganic matter for a time, but the only power that can unify, and hold in organic integrity, a great growing people, is *spiritual force*, the organific energy of the profoundest instincts and afinities of human nature. And especially in a popular government like our own, political institutions must rest on the solid foundations of the general enlightenment and moral soundness of the people. When these are lost sight of, or are suffered to lapse to secondary importance, danger begins. We are passing upon problems more difficult to solve than any that have yet challenged our national wisdom. Hordes of uneasy, lawless, unscrupulous adventurers are pouring in upon us, proposing to wipe out all restraints civilization imposes upon them, and turn our fair land into a free, general browsing pasture. In speech we are becoming Babel, and in reducing to any proximate digestible condition this mass of imported social incongruity, we shall be likely to be put to all the strain we can bear. The home, where the spirit of nationality should be cradled, instead of waxing stronger and stronger is waxing weaker. The church is not regnant at all on man's higher nature, the press possibly leading her; while commerce is what it always was and will be, substantially material. Art is not out of the market, and even charity, the greatest of all the trinity of salvation, though not dead, sings less than weeps by the way.

What is wanted is not so much resurrection as restoration; for death is not our trouble, not even weakness. The land is full of life, brains and vigor; the need is first, a rallying of all the great unused, trustworthy competence in our popular life; and secondly, a grand organiz-

ation and co-ordination of the diverse factors and functions in our national scheme, into one conscious personal being. All things should work together for good, every part strengthening a part, head, heart, hand, soul, that there be no schism in the body.

I can discern no agency of more hopeful angury that the republic shall receive no final detriment, than the public school; no prophecy or pledge of triumphant popular institutions more assuming than what consists in the body of workers before me and their co-laborers throughout the land.

J. L. Dudley.

MILWAUKEE, WIS.

PATRIOTIC TEACHING.

It is the duty of the common school teacher to teach her pupils patriotism; to create in them a desire to know the rights and institutions which they have inherited; to inspire them with love and reverence for those institutions; and to imbue them with an intelligent determination to stand by them under all circumstances.

Boys and girls may be taught to appreciate that *their* country was the first to carry into successful operation a system of self-government based on personal liberty, freedom of speech, and equality of rights. They will be interested to know how such a government came to be founded. The live teacher will find it an easy task to instruct her school in the story of the pilgrims, and the pupils will enjoy reading such poems as Mrs. Heman's Landing of the Pilgrims, etc.

By the time the story of our country has reached the Declaration of Independence the teacher's golden opportunity has come. She will find the boys ready to learn Patrick Henry's speech before the Virginia convention. Suppose a twelve-year-old boy does button up the top button of his coat, inflate his lungs and shout Henry's immortal words: "But as for me, give me liberty or give me death." Or, again, Henry's speech in the Continental Congress: "Our chains are forged. Their clanking may be heard on the plains of Boston! The war is inevitable, and let it come! I repeat it, sir! let it come!" His, will not be the eloquence of a Patrick Henry; but he would better do this, a thousand times better, than stand on the platform and finger the bottom of his coat while he recites in a sing-song tone:

Little drops of water,
Little grains of sand,
Make the mighty ocean,
And the beauteous land.

Let the mighty ocean and eternity take care of themselves. Let the teacher see to it that her boys are taught patriotic literature of the right sort. She should teach her girls just such speeches as she teaches the boys. It is not right to leave the girls to get their patriotism from their father's politics, as is too often the case. As a rule women are not patriotic. They have a certain devotion to the political party to which their fathers and husbands belong; not because of the principles of the party, for of these they know nothing; but because they are the opinions held, or supposed to be held by father or husband. The hearts of women are often braver and more devoted than the hearts of men, and where the cannon has slain its thousands, women are there to tenderly care for the dead and dying. But it is not for love of country, it is for love of fathers and brothers.

As a rule women know nothing of the institutions of their country. They do not read those portions of the newspaper, for instance, which will give them an idea of the postal business and mail service of the United States which now reaches out to every town in the civilized world, all of which is under the supervision of Postmaster General Vilas. But they do read the gossip in relation to the elegant costumes which Mrs. Vilas wears when she appears in Washington society. As a rule women are in dense ignorance of the great political and financial questions of this nation; yet half the women are clamoring for the ballot; as though the ballot would make them intelligent in civics. It is to be hoped that the right of franchise will be withheld from women till they know more of the great issues of their country. How is this great and important work to be done?

It must begin in the public schools. The teacher must do the greater part of the work. She may tell her girls that it was a woman, Geo. Washington's mother, who first advocated the separation of the Colonies from the mother country. Then teach them John Adams' supposed speech in defense of the Declaration of Independence. Their hearts will thrill as they recite those immortal words, "Live or die, survive or perish, I am for the Declaration. It is my living sentiment and by the blessing of God, it shall be my dying sentiment, independ-

ence now, and independence forever." Every girl in school ought to feel that under similar circumstances she would be proud to take a midnight ride for her country as did Paul Revere, "On the eighteenth of April, in seventy-five:

> One, if by land, and two, if by sea;
> And I, on the opposite shore will be,
> Ready to ride and spread the alarm
> Through every Middlesex village and farm,
> For the country-folk to be up and to arm."

A girl is just as capable as is a boy, of understanding Josiah Quincy when he says: "In defence of our civil and religious rights, we dare oppose the world? With the God of Armies on our side, even the God who fought our fathers' battles, we fear not the hour of trial, though the hosts of our enemies should cover the field like locusts. If this be enthusiasm, we live and die enthusiasts." Or Patrick Henry's "Cæsar had his Brutus, Charles the First his Cromwell, and George the Third may profit by their example; if this be treason make the most of it." As soon as a girl is old enough to at all comprehend what Webster meant when he said, "Liberty and Union, now and forever, one and inseparable," she ought to so familiarize herself with Webster's second speech on Foot's resolution, that instead of calling it dry, she would feel it to be a masterpiece of parliamentary eloquence.

There are many extracts from speeches that ought to be impressed on the minds of girls and women; as for instance: "That this nation, under God, shall have a new birth of freedom; and that the government of the people, for the people, and by the people, shall not perish from the earth." Or, again, "We are one, by the configuration of nature, and by the strong impress of art. We are one, by the memories of our fathers. We are one, by the hopes of our children. We are one, by a constitution and a union." Or, again, "I will love no party better than I love my country, honor, justice and truth."

Our nation is rich in patriotic literature; but the teacher may find an inexhaustible store outside of it, from which to draw. It is an advantage to any young person to be able to recite or read with appreciation, Scott's

> "Breathes there a man with soul so dead,
> Who never to himself has said,
> This is my own, my native land."

Or some of the great parliamentary speeches of Edmund Burke, or of William Pitt, or William E. Gladstone; or the speeches of that second Demosthenes, Daniel O'Connell, or of Charles Stewart Parnell, when he speaks for his noble, generous, brave and impulsive people.

Never in the history of this nation was patriotism called upon to assert itself more decidedly than at present. Never has the country been in such danger from greed, selfishness, ignorance, prejudice and false ideas. J. G. Holland expresses a part of our need when he says:

> God give us men! A time like this demands
> Strong minds, great hearts, true faith and ready hands;
> Men whom the lust of office does not kill;
> Men whom the spoils of office cannot buy;
> Men who possess opinions and a will;
> Men who have honor,—men who will not lie;
> Men who can stand before a demagogue
> And damn his treacherous flatteries without winking!
> Tall men, sun-crowned, who live above the fog
> In public duty, and in private thinking;
> For while the rabble, with their thumb-worn creeds,
> Their large professions and their little deeds,—
> Mingle in selfish strife, lo! Freedom weeps,
> Wrong rules the land, and waiting Justice sleeps!"

Every woman has cause to tremble when she thinks of the riots of Pittsburg and of Chicago.

She has her part to perform in removing the cause of disturbances. Let her be trained in the public school and out of it to be true to the institutions of her country under all circumstances. She will then have no sympathy with that false and abominable sentiment which is growing so rapidly in our cities, and which expresses itself in the flowers and delicacies which are showered upon condemned criminals and anarchists by American girls and women.

Cornelia Rogers.

WHITEWATER, WIS.

GRAMMAR AGAIN.

The fact that comparatively few boys have any love for the study of grammar, and the usual results of such experiments as that of Prof. Gillan certainly afford food for careful thought and suggest the ques-

tion, does the teacher's failure to interest and profit the grammar class spring from the nature of the subject, or from his own lack? Goethe says, "There is nothing more frightful than a teacher who knows only what his pupils are intended to know. He who means to teach others, may indeed keep back the best of what he knows; but he himself must not be half-instructed." While our graded schools attempt to cover so much ground and give a smattering in so many branches, are not teachers apt to forget the importance of grounding themselves in such studies as English grammar? Certainly much of the work done in "language lessons" lacks point and power because the teacher himself has failed to get a comprehensive grasp of his subject, and so wastes energy on unimportant points instead of aiming at those essentials that lie at the root of a correct and intelligent use of English.

The writer had long finished grammar ere the truth dawned upon him that in the entire English vocabulary there are but seven words having distinct objective forms. Such simple facts as this are very serviceable to the teacher in planning his campaigns. They are the keys to many castles of difficulty.

Experiments in the line of those made by Prof. Gillan show that, in the use of these seven objective forms, mistakes occur most frequently when the sentence stands in transposed order. This arises from a failure to see clearly and quickly the relation existing between the various elements of the sentence. A thorough course in sentential analysis must precede a thorough mastery of English grammar. Select your sentences from the choice thoughts of master minds, and you make easy and pleasant a read that is often the reverse. Such study makes better readers, cultivates a taste for good thoughts and beautiful expression, and affords a mental discipline not surpassed by the study of algebra.

That we learn to do by doing is indisputable; but unfortunately this is as true of learning the wrong as of learning the right. With most pupils, long-continued use of incorrect forms and expressions has worn deep grooves long before they reach the school room. No amount of drill in rules and definitions can undo the mischief. Patient, persistent drill in correct expression must make new grooves in which tongue and pen may run easily and smoothly. Require numerous and sensible illustrations of all that is learned. Rule out all parrot-like imitation of those given in the text-book. Demand sentences that *mean something*,

and arouse in the pupils an ambition to bring into the class original sentences containing some interesting facts. We teachers chewed so long on the old stock sentences such as, "John saws wood," that we are liable to think nothing else is orthodox. What can be more wearisome than a lesson on the various uses of the pronoun *he*, calling out such sentences as, "He is sick;" "The boy hit him!" No wonder a healthy boy tires of such food. But give him the same exercise, suggest that he take for his hero the president or general whom he admires most, and the change is a marvel. There is new life in the boy, and new interest in the class. Interest and enthusiasm must be the fires in the school-master's forge.

Composition is most profitable when combined with the regular grammar work. Much variety may be allowed, providing the teacher constantly works with a definite aim. Let the selections given for analysis be rewritten after the thought has been mastered. Select for subjects interesting topics touched upon in geography or history, descriptions of buildings or other objects of note in the neighborhood, or events of current interest. Spicy personations of persons, places, or historical events add both interest and information.

My experience gives me a growing faith in the value of blackboard work. It gives daily practice in spelling, punctuation, and use of capitals—points not reached by the ordinary recitation. It saves time by giving simultaneous employment to many. It places the work before the entire class in such a way that criticisms may be given with more point and justice. To make this work prompt and effective, the teacher must make daily preparation, selecting and numbering his topics beforehand. When this is done, the time lost in getting to work is amply made up by that gained in reciting.

Much of the routine of fixing all that must become mechanical is relieved of monotony by the teacher's ingenuity. There is an indescribable pleasure in an old-fashioned spelling match, with its generous emulation and its battle-like flavor. The charm is none the less when the method is applied to other work, such as spelling the number, gender, or case forms, or the principal parts of irregular verbs. Suppose the subject for review is *voice*. Let the entire class, or the division not at the blackboard, stand, and then require each to give a sensible sentence illustrating, say, the active voice. Incorrectness and tardiness of response count alike as failures and seat the pupil. Variety is secured in

various ways, as, one giving a sentence in the active voice, the next changing it to passive, and the next telling how the change is made. If there are a few indolent ones who prefer sitting to making a good earnest effort, a reversal of the plan, or *spelling-up*, proves an effective cure. The value of this method in arousing interest, in fixing important facts, and training in ready ability to use them is obvious. Try it, fellow-teachers.

In such work as fixing a complete conjugation, what one pupil calls the "chain-lightning method" proves effective. Each in turn with "chain lightning" rapidity must give one form. Then let the teacher call for some particular form, or ask where a certain form is found, or require a sentence having the verb in a given tense and number. Another plan requires all to bring in a certain number of sensible questions on the most important topics that have been taken up. Preparing such questions cultivates the boy's judgment and fixes what has been learned. The rest of the class enjoy these questions, for they differ both in matter and form from those of the teacher, often giving him valuable hints. We seniors are apt to forget how monotonous class routine may become and how much youngsters enjoy such variety.

The boy who frankly says he sees no use in studying grammar, must be led to see. If the lad has a taste for business, show him the necessity of correct punctuation and exact expression in all business writing. Keep a constantly growing store of incidents to show how incorrect punctuation and ambiguous expression have caused endless loss and trouble. Lead the boy to see that the business man, of all men, should be able to express himself readily, pointedly, and pleasantly. The boy who looked forward to a professional career can be more easily convinced that poor English would do much toward closing against him the door of success. Constantly challenge the class to show the practical value of every point learned.

J. W. Livingston.

Dodgeville, Wis.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

Rapid Breathing and Beating of the Heart During and After Violent Exercise.— Objects of the Lesson: To teach that: 1. Working muscles require an extra supply of food and oxygen.

2. Muscles after violent exercise should be brought to rest gradually.
3. Exercise should be taken where there is an abundance of pure air.

All are familiar with the fact that after protracted and violent exercise, like running, there is great difficulty in breathing with sufficient rapidity and that the heart beats both more forcibly and more rapidly. What do these facts mean? The only organs brought into violent activity at such times are the muscles and the nerve centers controlling them, and hence it may be naturally and correctly inferred that the rapid breathing and beating of the heart are to supply these organs with the needed oxygen and food. We cannot, if we would, run rapidly for more than ten consecutive minutes, for the simple reason that we cannot supply the muscles and nerve centers with oxygen as rapidly as they consume it. If we persist in such running we faint, because the heart, itself a muscle, fails, for lack of oxygen, to maintain its own action, so as to supply the brain with sufficient oxygen to enable it to work properly.

By comparing fleet-footed animals like the horse, dog and deer with the slower moving forms, such as the cow and the pig, it will be observed that one striking difference between the two forms is in the relatively much deeper and broader chests, and hence larger lungs, possessed by the fleet-footed forms, thus illustrating in another way the important fact that muscles, in order to act, must be supplied with oxygen.

Not only is the blood and oxygen forced through acting muscles more rapidly, but the blood-vessels open wider, allowing larger streams to flow; for it is the union of oxygen with the food in the muscles which gives rise to the energy the muscles exert, just as the union of fuel and oxygen in the steam engine is the source of its power. But the engineer does not intentionally have his engine burning all the fuel possible at the instant it is freed from work. Should such a condition happen he opens the steam escape to allow the great amount of energy his engine is making to pass away and become heat in the open air, where the steam condenses. Were this provision for the escape of energy not made the temperature of the engine would run up rapidly to a dangerous point. Now something like this does actually happen in muscles which, after working violently, are suddenly brought to rest. The energy which would have become visible motion had the muscles been kept at work must now be transformed into heat, and this raises the temperature of the muscles and other organs of the body above the point of health, and something like an inflamed condition is the result.

If, however, we diminish the violence of the exercise gradually, as the owner of the race-horse has found he must do, so that the nervous system has time to diminish the blood and oxygen supplies, the excess of heat which would otherwise result is avoided.

Since muscles in order to contract must be supplied with oxygen it follows that the very best place for muscular exercise is in the open air, and that when it must be taken indoors there should be as large a supply of pure air as possible. It would be manifestly absurd to attempt to run a five-horse-power engine in an ordinary school-room and at the same time draw the air from and discharge the smoke into the same room; yet we, as teachers, sometimes do nearly as absurd a thing when we put fifty pupils through a course of vigorous calisthenics in a room where there is no special provision for ventilation.

EXPERIMENTS WITH THE MASSETER AND TEMPORAL MUSCLES. —OBJECTS OF THE LESSON: To teach that when muscles are in a state of contraction, vibrations are going on in them which give rise to sounds of very low pitch.

Obtain a ball of putty—about one lb. for a class of twenty-five—and knead it until it is plastic and does not stick to the skin. Supply each member of the class with a piece about the size of a hickory nut. Let each pupil halve his putty and form two balls, pressing one gently into each ear so as to deaden sounds from the outside. If a roaring in the ears is heard, note its character and intensity. Now press the teeth firmly together and listen to the murmuring sound which comes as the teeth are pressed together by the contraction of the masseter and temporal muscles and ceases when these muscles are allowed to relax. These sounds are caused by about thirty-two vibrations every second of time set up in the muscles by the stimulus which comes intermittently to them over the nerves. Those of the class who do not experience a roaring in the ears will be able, by clinching the fists tightly, and by using other muscles of the body, to observe that similar sounds are produced by other muscles, but they will be less distinct because they travel a greater distance before reaching the ear. To understand just what is going on in a muscle during its contraction some other experiments will be necessary. Obtain a piece of heavy cotton cord about fifty feet long; fish twine will answer, but heavier is better; wrapping twine is too light. Secure one end of the cord high on that part of the wall which will allow you to stretch the longest cord. Holding the free end of the cord

in the hand, stretch it so as to bring it nearly straight. Now with a light stick strike the cord a quick, sharp blow downward about one foot from the hand. A *hollow* is made in the cord where it is struck which will be seen to travel along the string to the wall where it will turn back and return to the hand as an *elevation;* this is a wave, and it has traveled along the cord to the wall, where it was reflected and then came back to the hand. Repeat the experiment several times varying the tension of the cord until the phenomena are clearly seen. How does this wave travel to the wall and back to the hand? In this way: the part of the cord which is crowded down by the quick blow cannot come back until it pulls down upon the cord which has not moved down with the blow. By pulling down upon the cord it raises itself but at the same time depresses the part it pulls upon; when this second portion pulls itself back a third portion is depressed, and so on until the wall is reached, which cannot be drawn down. The result is the cord flies up above its natural position, but now, in pulling itself back, it must lift another portion of the cord; hence the depression comes back to the hand as an elevation.

Next hold the string so that the sag is considerable, and at the same time vibrate the hand rapidly up and down. The string is now divided into segments each of which moves up and down with the hand, and these are separated by small portions of cord which do not vibrate. By varying the rate of the hand and the tension of the cord it will be easy to make the cord vibrate in two, three, four, five or more segments at pleasure. In these experiments each movement of the hand answers to the stroke of the stick in the first experiments, and produces a wave in the cord which travels and is reflected in the same manner. As the first wave reaches the wall it is reflected and comes back as an elevation, and on its way meets the second wave; but as these two motions on the cord are in opposite directions and equal, the point on the cord where they meet and pull must remain at rest. The fixed point now acts as the nail in the wall, and from it the second wave is reflected back as an elevation as the first was from the wall; but it in turn meets the third wave somewhere on the cord, and a second stationary point is produced. When the strokes of the hand are timed so that the second wave is produced just as the first reaches the wall it is plain that the second wave will meet the first in the middle of the cord and the cord will then vibrate in two segments.

Now stretch a piece of No. 30 cotton thread across the top of the desk, fixing one end to the foot and hanging a light book to the other. Place two rulers on edge under the string on the desk about three feet apart. Draw the string to one side and let it go. The thread divides into segments as the cord did, and these are made evident to the eye by the fact that the thread appears to swell out in places and contract in others. A distinct sound is also heard each time the thread is made to vibrate, and this is due to the vibrations, as all sounds are. Now experiments with muscles in a state of contraction have shown that they are traversed by waves which divide the fibers into segments, as we have seen the cord divide; and the sounds muscles produce are due to these vibrations.

COMPARISON OF THE MOVEMENTS OF CHILDREN WITH THOSE OF MATURE AND AGED PEOPLE.—OBJECTS OF THE LESSON: To teach that: 1. As age advances the contracting portions of muscles become shorter. 2. People past middle life cannot safely engage in violent, protracted muscular effort.

If we watch the movements of the limbs of very young children and compare them with the corresponding movements of mature and old people, we shall observe that the extent of movement lessens relatively with age. Children can take longer steps relatively than mature people, while aged people are obliged to take very short steps indeed. These changes are in part due to the fact that, as age advances, the tendinous portions of muscles become lengthened by a disappearance of muscle cells and the formation in their places of tendinous tissue. It It follows from these changes that aged people are less able to endure protracted, violent muscular efforts, because the number of muscle fibers to do the work is reduced, and consequently those that remain must work for the time relatively harder in order to accomplish the same result. It would be a very dangerous thing, for example, for a man past fifty to participate violently in sports, as he was perfectly able to do between the ages of twenty-five and thirty.

FFFECTS OF STIMULANTS AND NARCOTICS UPON THE MOTORY SYSTEM.—PRELIMINARY: In considering the effects of stimulants and narcotics upon the human system I suppose that, in order to follow the spirit of the law, we are bound to consider the effects of alcoholic beverages, of tobacco and of opium, whatever else may be considered or omitted, and whether physicians may class these substances as stim-

ulants, as narcotics or otherwise. It will be assumed, also, in the remarks which follow, that the school has done what the law expects when the physiological and pathological aspects of the general subject have been adequately presented. The term stimulant, in the physiological sense, will be used to designate an agent which increases the activity of the body as a whole, or of some portion or organ of it, without contributing material for the production of the energy manifested in that activity: while a narcotic will be understood to be an agent which tends to diminish such activity. It will be helpful to the understanding if we start with this broad view of both stimulants and narcotics. We need to understand that there are healthful stimulants, and healthful narcotics, as well as harmful; that a given stimulant or narcotic may contribute to health when used under one set of conditions, or in one quantity, while under other conditions, or in other quantities, the opposite effects may follow. We need to understand that there are physiological and pathological effects, some healthful and some harmful, due to immaterial as well as material stimulants and narcotics. Too strong a light falling upon the retina acts, in the broad sense, as a stimulant, resulting in a contraction of the circular muscular fibers of the iris, thus removing automatically an irritant. Too great heat thrown upon the body or produced in it results in the sweat glands being stimulated to greater action, thus reducing the abnormal temperature. Either the sight or the odor of a palatable substance may result in stimulating the salivary glands to fill the mouth with saliva; while the sight or odor of another may have the opposite effect upon the glands, and at the same time cause a spasmodic contraction of the gastric muscles and an inverted action of those of the oesophagus. Some of you know from experience that a sudden fright or other violent emotion results in a strong and rapid beating of the heart; while others have had the opposite experience. We have seen that before any muscle can contract it must be stimulated, and one of the primary functions of the nervous system is to stimulate the various organs of the body; while another is to inhibit, or, as it were, narcotize certain organs at certain times. We, as teachers, ought fully to realize that a despondent state of mind makes the blood flow languidly through the body, the skin and kidneys act imperfectly; indeed all active tissues of the body are in the broad sense narcotized by this abnormal influence of the mind, while the cheerful mood stimulates each and every organ to do its best. In the one case we are incapacitated for good work of

any sort, even though the supply of energy-producing materials on hand be abundant; in the other we may draw down to depletion the reserves before becoming aware of it. We need also to bear in mind that the chief work of the good physician with all his medicines lies in three directions: to render tissues more active or more sensitive—stimulate in the broad sense; to render tissues less active or less sensitive—narcotize in the sense here used; and to change in quality or alter the action of tissues. His "general tonics" lead to greater action—stimulate—by increasing the energy-producing stores through more perfect digestion, circulation and assimilation. His "general stimulants" lead to greater action—stimulate for a time only—by drawing out for consumption the energy-producing stores in stock, but making no provision for replacement. His "general sedatives"—here called narcotics—make the tissues less sensitive, less responsive to the vital forces; and the processes of assimilation and of disintegratiom accordingly go on less rapidly, so that the bodily mechanism runs more slowly under their influence. Here leading physicians, at present, place alcohol, opium and tobacco, the three being classed by them as narcotics; while they class tea and coffee with stimulants.

MEASURING THE ABILITY OF A MUSCLE TO GENERATE ENERGY.—OBJECTS OF THE LESSON: To teach that: 1. Whenever or wherever matter is moved work is done. 2. Whenever or wherever work is done it is at the expense of energy. 3. Whenever or wherever energy is expended by the body it is through the consumption of food eaten and oxygen breathed. 4. The amount of energy the human body can generate is limited by the amount of food which can be assimilated and oxygen which can be breathed.

Raise a one pound weight vertically just one foot. One unit of work, called the foot pound, has been done. Raise it two feet. Two pounds of work have been done. Set the seconds pendulum used before to vibrating and raise the weight two feet high with each swing. Two units of work are done each second, two units of energy are expended, and to produce this energy a fixed amount of oxygen and food have been required. A horse is estimated to be able to generate energy with sufficient rapidity to lift 550 pounds one foot high in one second of time; while a man is able to do about one fifth of this amount of work.

Set the pendulum swinging again. Allow the class to stand and raise the body off the heels onto the toes while the pendulum swings one way,

allow it to drop back again with the opposite swing. Continue this movement until the muscles in the calves of the legs become weary, keeping count of the number of vibrations the pendulum makes. Measure the vertical distance through which the body is raised by holding a ruler against the wall over the head of the pupil, when his head just touches the ruler while on tiptoe; the distance between it and the head when at rest is the vertical distance through which the load has been lifted. Suppose the body, weighing 100 lbs., was raised through two inches at each effort, and the pupil was able to continue the effort only five minutes. How much energy was being generated, and what was the horse power these muscles were exerting? One lb. lifted one ft. high in one second is the unit of energy. In the experiment 100 lbs. were lifted 1-6 of a foot high in two seconds and this is equal to 8⅓ lbs. lifted one ft. high in one second. The two muscles together, then, were generating energy at the rate of 8⅓ units per second, or 1-66 of a horse power, and according to the supposition could continue that during five minutes only. Here then is a result which enables us to say that the muscles in the calves of the legs cannot continue to generate energy at the rate of 1-66 of a horse power during more than five minutes; and just as there is a limit to the amount of work these muscles can do, so there is a limit to the amount of work any active organ in the body can do in a unit of time. This is a very fundamental truth, and it cannot be too fully appreciated.

Perhaps the most general serious objection to the use of tobacco and alcoholic beverages by healthy people is found in the fact that they slacken the vital processes which result in the building of tissue, in the generation of energy and in the removal of waste materials from the body; while at the same time they impose an extra burden upon the body, without in any way contributing energy for the removal of that burden. Smoking, chewing and drinking are each muscular exercises, which require energy generated in the body and exerted by the muscles to produce them. To burn ¾ of an average cigar requires theoretically 3.2 gals. of air—practically I have found it to be nearer four gals. This must be drawn through the cigar and expelled by muscular effort in addition to that of ordinary breathing; and this is but a small part of the extra muscular effort imposed by smoking. Individually and for the moment the amount of energy wasted is small, but the aggregate for a lifetime is large, as can be seen when we bear in mind that tobacco to

the amount of over 200,000 tons annually is either burned or has its juices expressed from it through the action of the muscles of the mouths of only a portion of the male population of the United States. Tobacco relaxes the muscles, making them weak, and both it and alcohol diminish the power of the blood to carry oxygen to and waste from them, and hence are never used by persons while in training for any great muscular endurance.

Alcoholic beverages, by producing an unnatural thirst and by retarding discharge of waste materials from the body, result in the tissues and blood-vessels becoming over-charged with fluids. So greatly is the thirst increased that Mr. G. Thomann—speaking in defense of the use of malt liquors—quoted in *Science* Jan. 14, '87—states that the men working in New York breweries, where they get beer free, average about ten pints daily; and yet the daily need, according to Dr. Richardson, of water, over and above that taken with the food, is only one pint. These extra fluids must of course be carried about by energy generated from the food eaten and oxygen breathed; and a large share of them must be pumped round and round through the body by the heart, thus wasting muscular energy in still another way. Alcoholic beverages impose still another burden upon the muscular system, by stimulating an abnormal growth of connective and fatty tissues throughout the body, thus increasing still farther the dead weight to be continuously carried about, and making the joints more difficult to bend. Some alcoholic beverages, if not all, affect the muscular fibers themselves, resulting in a deposit of fatty droplets in them in place of the true contractile substance. The muscular system then is at once overburdened, under-fed, imperfectly purified and may be structurally deteriorated.

As a book bearing upon this subject and many others vital to teachers I would recommend Diseases of Modern Life, by Dr. Richardson.

F. H. King.

River Falls, Wis.

READING CIRCLE WORK—SEVENTH MONTH.

ELEMENTARY COURSE.

Page. Read pages 319 to 361. History. Read pages 203 to 254. Physiology. Read chapters 17, 18 and 19.

ADVANCED COURSE.

QUICK. Read the article on Herbart Spencer. The essays on Education by Mr. Spencer, only two of which are discussed in this paper, and that only partly, are of very great value. Teachers who can do so should procure the book and read it through with care. The essay on Moral Education has in it suggestions quite as important and as fruitful, as it seems to us, as the two reviewed in this chapter.

FITCH. Read chapters IX., X. and XI. It is hardly necessary to call attention to the value of the discussion of the extremely important topics, suggested in these chapters. In relation to grammar, for example, the author suggests the rational plan of treatment; of this there can be no question, but as a matter of fact how few teachers work on this plan! The discussion of paraphasing and of the study of literary masterpieces is not less valuable.

SULLY. Read chapters XIII., XIV. and XV.

POLITICS. Read chapters XXXVI. to XLII. The extreme brevity of the statements of rights in the first of these chapters, and of duties in the second, is to be regretted, for many readers would be profited by a fuller discussion of them. But the meetings of the circles afford the opportunity for such discussion, which should be turned to account.

HISTORY. Read from page 540 to 571.

LITERATURE. In Brooke read to page 153. In Swinton read pages 366 to 454.

OFFICIAL DEPARTMENT.

QUESTIONS AND ANSWERS.

Q. Can a majority of the school board authorize a teacher to teach on the 22d of February, and give him credit for that day?

A. A teacher is entitled to credit for the 22d of February and all other holidays occurring during term time, whether school is taught that day or not. But he may (*not*) teach on that day and offset that against some other day not a legal holiday on which he does not teach, and thus make it count *two days* of teaching. [Reprinted from February number of JOURNAL, where, by omission of the word *not* after the word *may* in the third line, made the answer read directly contrary to the decision given.]

Q. Where a school district proposes to build a new school house, can the district be required to select a new site?

A. No. Neither is there any provision for appeal when the district owns a site, and votes to build a new school house, without any mention of the site. The original vote of the district designating the site and procuring the same determines where the new house must be built.

Q. May the district board authorize a teacher to teach on Saturday to make up for a day lost?

A. No. The law forbids boards in settling with teachers for wages to count any Saturday. It is questionable also whether Saturday can be counted as a day of school to make up the six months required by law.

Q. At the annual meeting the district voted to have a winter term of four months, and a summer term of two months. May the district board for good reasons, maintain six months winter term, and omit the summer term.

A. No. The board is bound by vote of the district, taken as authorized by law. A special meeting may be held, if there are good reasons, to change the determination.

Q. A special meeting is called to vote upon allowing the school house for purposes which are not in the interest of good order or proper care of the property of the district. If a majority vote in favor of granting the use of the house, is there no redress?

A. The law intrusts the care and keeping of the school house exclusively to the district board. The board is responsible for the house, and the district cannot vote to grant its use for any purpose which the board do not approve. Such a vote has no legal force or effect.

Q. What is the duty of the town clerk in apportioning public school money, where districts have been divided, and a new district has been formed since reports have been made by district clerks, and filed in his office?

A. The Attorney General of the State has given his opinion that pupils changed from one district to another by alterations of boundaries of districts take with them the status held in the old districts. If the new district maintains *three* months, or more, of the school before the apportionment is made, which, with the amount maintained by the old districts before change during the year, equals or exceeds six months, then the new district is to receive the apportionment upon all such scholars.

EDITORIAL.

MANY readers will be interested in the "Mathematical Section," a new feature of the JOURNAL to be conducted by Prof. T. B. Pray, of Whitewater. It will aim to be practically useful to the teachers in common and graded schools, and will be partly devoted to the solution and discussion of such problems relating to mathematical work as may be received from them. In addition, we have the pleasure of publishing in this number an exceedingly neat and interesting solution of an elgebraic problem by Prof. Hutton. The practical value of Prof. King's papers becomes more apparent with each fresh installment. We are sure that no progressive teacher of physiology in Wisconsin can afford to do without them. We have other plans for the improvement of the JOURNAL which we hope to realize soon. Among them is a project for issuing, in a series of seven or eight numbers, an admirable little English book on "School Inspection," by Mr. D. R. Feorm, assistant commissioner of endowed schools. It is full of practical suggestions of great value to teachers and superintendents.

ELSEWHERE will be found several articles of interest bearing upon Teachers' Institutes. The problem how to make them as efficient agencies for good as possible is now attracting attention in several States, and deserves serious study. Our Wisconsin plan embodies several features to which other States are now tending. By connecting the institutes with the Normal Schools unity is given to the training work of the State, which is further strengthened by the conductors' meetings and the schemes of work issuing from them. Moreover, we have come to recognize that the object of the institute is rather to train teachers in the way of doing their work than to cram them upon the subject matter of the several branches. It is quite possible that there are some errors and drawbacks in the working out of these wise plans. It is possible and natural to make this unifying process too stringent, so that the adaptability of the Institute to local conditions and needs is sacrificed. Wisconsin is a large State; some of its counties are new and but little advanced in school work; others have fully developed school systems and teachers fairly well trained. If the institutes are to be really useful these differences of conditions must not be overlooked, nor a program adapted only to one set of conditions forced indiscriminatingly upon all. Unity at such a price is too dearly bought. But the great difficulty, as it seems to us, lies in the fact that the same institute contains elements so widely dissimilar. A teacher of eight or ten years' experience sits beside another who is going to make her first attempt this summer; a graduate of the University beside a graduate of the district school. How can the same instruction be profitable to all alike? Again, we have seen Prof. Hutton working heroically with one hundred and eighty-two teachers; and our judgment is that the work was profitable, but the conditions intolerable. Half that number is as many as one man ought to undertake to handle, and with half the number he would do twice as much good. In large institutes, then, a natural solution of the difficulty would seem to be to

form in some subjects a beginning and an advanced section. This might at least be tried as an experiment; and it seems not unlikely that one result of it would be a more critical effort to adapt the institute closely to the actual needs of the teachers. If the conductors themselves were able, during one week of each year, to visit schools — district schools — with some county superintendent, it seems probable that valuable suggestions to them would grow out of this close contact with the work as it is, and perhaps to the superintendents and to the schools also. But, even as to methods of teaching and management it seems to us that the time has come when some knowledge on the part of all the members of an institute may be taken for granted. If not, what is the significance and value of the examination in the Theory and Art of Teaching which all candidates for a certificate are required to pass? Is there any thing practical about it? Is it any thing more than irrelevant interrogatory platitudes on one hand and crude and inapplicable guesses on the other? We need to rescue this subject from aimlessness and inanity, or abandon it altogether. Something has been done towards this by the use of Page's book in the Reading Circles. To make more general the good work which has been done in some counties with this book, and to join with it some good practical manual of methods, such, for instance, as Prince's Courses and Methods, which every one proposing to teach must know in order to pass an examination — this would relieve the institute work of much of its indefiniteness, and give the conductor a distinct basis of common knowledge upon which to found all his instructions.

SLIPSHOD teaching is certainly very deplorable, and, notwithstanding all that has been done to eject it from the schools, is still by no means uncommon. It is a product of the ignorance, incapacity or slothfulness of the teacher. You may see it in a reading class in which mumbling monotony of tone prevails; in which enunciation is quite neglected, final syllables are omitted, words run together, consonants elided, and our manly and vigorous English tongue made to appear the speech of hinds and sluggards. We have seen arithmetical problems sprawled out over the blackboard in clumsy confusion, and as little attention paid to the fact as to the habitual and inexcusable errors in multiplication and division. The fault is not confined to elementary English branches. Who can forgive the teacher of beginners in Latin who permits a class to blunder on, heedless as to the quantity of syllables, misplacing accents, guessing confusedly at case and tense forms? Better a hundred fold that they had never seen a Latin book! How shall the loose and shambling habits thus acquired ever to be overcome? How many times in the future will the pupil, if he holds on to study despite his disadvantages, find the false habits of these early days obtruding themselves to mortify him, to confuse his mind with needless questionings and doubts of himself, to put him at a disadvantage beside those no abler than he but more fortunate in their early training? Slipshod teaching cheats the pupil of his time and the opportunities of youth; it deceives into believing that he knows what he does not know; it handicaps him with habits of inaccuracy and

uncertainty; and sends him out into the world confused, blundering, helpless, living in twilight, when it was his privilege to be strong and sure, and to move in full light. The slipshod teacher is a mind slayer.

WE have examined a number of manuals of methods for elementary schools, and do not find in any, except Ginn & Co.'s "Courses and Methods," any reference to instruction in civics. In addition we have examined the courses of study of over twenty Wisconsin elementary schools and find no evidence that any effort is made in them to teach the duties and responsibilities of citizenship. One exception must be made. In the Manual of Instruction for the Milwaukee schools it appears that the constitution is studied in the eighth grade—which is about equivalent to the first year of the high school course in many of our cities. In some schools notions of organization for government are given in connection with geography, but probably in a confused and unsatisfactory way. Thus it appears that our schools are furnishing instruction in this important subject only to the small number of pupils who reach the higher department. Moreover, no considerable effort has yet been made to prepare manuals for such instruction. We do not know of any which seem to us quite suited to the wants of intermediate or grammar grade pupils. It requires a wise selection of topics, and skillful handling of them, to make the subject intelligible to pupils of these grades. Teachers in the grades cannot be expected to make such selections and devise such methods unaided. They have too much work on hand, are not mature enough, have not sufficient grasp of the subject. If, therefore, the talk on this matter is to bear fruit, the first step is to secure the preparation of suitable manuals of instruction. Here is work for the Institute of Civics. It is well to stir up the public, but this stirring up needs to be supplemented with some definite suggestions and helps. Is the Institute to confine itself to mere talk? Can it help us to answer the question what should be done? Can it produce helps for doing this work?

ALL teachers should take and read an educational journal, and such a journal as serves to give them a fresh impulse and interest in their work. Nothing will contribute so much to keep them out of routine and humdrum ways. None of us can live profitably by himself; we need contact,—collision if it must be,—with others to rouse us and put us upon doing our best. A good educational journal furnishes this contact—sometimes collision doubtless, for it is very likely to say that with which we cannot agree. It stimulates us to think upon topics pertaining to our work; it makes us part of the great body of teachers who read it, and so keeps us in the current of living thought and effort in our own pursuit. To look upon it merely as a means for learning new methods is a great mistake. Part of its mission is to suggest school room devices, and to offer school room helps; but this is only a part. Part of its office is also to "tell the news," to keep us posted as to what is going on; but this also is only a part. Its chief mission is to stimulate, to interest in educational problems and projects, to bring us into relation with the best thought and purpose of the great body of

teachers to which we belong. Its periodical appearance to perform these offices becomes, in time, a part of the routine life, but does not a considerable portion of the interest with which we go to our duties spring from this source? The really vigorous and progressive worker takes good care to keep himself abreast of his own times by taking and reading a journal devoted to his special pursuit.

OUR DRAWER.

HUNTING MYOPIA.

We gladly avail ourselves of the following letter to call attention in general to the very important matter of which it treats, and publish with it some valuable suggestions for preventing the growth of myopia among pupils of our public schools — an evil which careful observations show to be on the increase in consequence of bad school habits:

DEAR DR. STEARNS: I send you herewith some notes of observations made upon the eyesight of pupils in this school, during the first half of the present school year, with reference to myopia.

The test used was Monnoyer's, published by Ginn & Co. Whole number of pupils tested, 211. Age, from 13 to 30 years. Sex, 66 young men, 144 young women.

Of the whole number, 159, or 75 per cent. had normal vision or but an inconsiderable deficiency. Of the remainder, eight persons showed 95 per cent. of normal vision; twelve had 90 per cent.; eleven, 80 per cent.; five, 70 per cent.; one, 60 per cent.; four, 50 per cent.; three, 40 per cent.; three, 30 per cent.; while four showed less than 10 per cent.

A considerable number were found to be quite unequal in the range of the two eyes; but as I did not test for this inequality with sufficient care in the earlier part of the work, the exact number of cases cannot be given. Eleven cases were detected, but the true number must be much larger. A few of the extreme cases are noted, as follows: No. 1 has 20 per cent. of normal vision in the right eye, and only 2 per cent. in the left. No. 2 has 8 per cent. in the right eye and 40 per cent. in the left.

Recurring to the general result, 31 persons, or one in seven, have but 80 per cent. or less of the normal range; 20 persons, about one in ten, have but 70 per cent. or less.

As between the sexes, it appears that the young men have much better eyes than the young women, 90 per cent. of the former have normal vision as against 70 per cent. of the latter. Without attempting to draw inferences from these facts, I submit them for the consideration of others.

You are at liberty to use the above data in any way that seems to you most useful. It seems to me that it would be a profitable thing to have similar work

done in all the Normal Schools. It seems to us here that we have the right to demand of those pupils seriously myopic that they shall at least wear the proper glasses as one condition of education at public expense for the work of teaching. I should perhaps have said, above, that the testing discovers a good many pairs of *weak* eyes not really myopic. Yours ever,

ALBERT SALISBURY.

WHITEWATER, WIS.

HOW TO PREVENT MYOPIA.

Myopia has developed to a greater extent in Germany than in any other country, and has accordingly been more thoroughly and systematically studied there. The following rules for avoiding it were adopted two or three years ago by the section on hygiene of the Berlin Teachers' Association, and are believed to contain the best practical suggestions in this subject yet given to the public:

I. Prohibit the use of the eyes in reading or writing when the light is obscure or excessive, and when in motion.

II. Insist upon a correct posture in reading, with reference to (a) light (b) erect posture, (c) holding book or (d) position of writing paper.

III. The book should be held at an angle of 40° with the table and at arms length from the eyes. A little observation will teach any one that this angle is the most convenient.

IV. For writing or study, the top of the desk or table should be three or four centimeters higher than the elbows are when the arms hang at the side. The front edge of the seat should be two inches under the front edge of the table, and both the fore-arms should be supported on the table, the left hand being occupied in hold the paper or book. The back of the pupil should be properly supported especially the lower part.

V. The copy book should be held obliquely before the middle of the body, so that the lines are perpendicular to the edge of the desk. Writing large and plain.

VI. There should be short pauses for rest, little home work, and practice in looking at a distance.

WORD ANALYSIS.

EDITOR OF JOURNAL: Please give, in the next number of the JOURNAL, a good method of teaching Word Analysis I have just been continuing the work of a class after the regulation tactics and have to confess that it is the most senseless piece of mummery that I was ever partner to. A brief test reveals the fact that a glib analysis and definition of words by formula is no sufficient evidence of the power to determine the meaning of words whose known elements

are strangely combined. I can get little evidence of independence and power.

W.

The question as stated above shows a clear apprehension of the real purpose of this study. That it is fruitless in the hands of those who do not know what that purpose is need surprise no one; but that a teacher who clearly comprehends the purpose fails of his result is an indication that the method of the ordinary text-books is radically wrong. That method may be described, as the *telling method.* It consists essentially in telling (1) what the roots, prefixes and suffixes mean; and (2) what a certain number of select words composed of them mean. Thus the study is largely memorizing matter placed before the pupil; or if he is asked to find out the meaning of some words the matter is so arranged as to cost him the least possible amount of effort and reflection. For this it would be wise to substitute *the method of investigation.* In this it is manifest that (1) above must be told and learned; but (2) should be found out by the pupil for himself: and the exercises of investigation should by so intermingled with those of learning as to make the latter interesting and easy. Of course a good dictionary is the most valuable of all books for this sort of study. Let the teacher, for example, give out a few root words for the pupils to work with, preparing as many derivatives and compounds from them as they can for the following recitation. Of course the meanings of the derivatives should be required. Or prefixes may be given out and a certain number of words containing them may be required as the exercise. This sort of exercise is likely, after a time, to become mechanical. It should therefore be supplemented by extempore exercises, in analyzing words given out in the recitation by the teacher. Pupils need not only to learn what a new instrument is and how to use it, but also to have sharp drill in the use of it that they may acquire genuine skill. Two weeks' vigorous competitive work in determining off-hand the meanings of well selected words — graded according to their knowledge and capacity — will do more to give this sort of skill than a whole term spent in the ordinary mechanical routine work with a text-book in Word Analysis. In addition to this they should be challenged to use what skill they have acquired on every suitable occasion. In the reading class, the grammar, geography or arithmetic, no opportunity of applying the new instrument should be allowed to pass unused, until a habit of seeing the meaning of words in their elements is thoroughly fixed in them. The schools too often content themselves with giving knowledge, end neglect the more important duty of giving *skill,* and the *habit* of using knowledge.

OUR INSTITUTES.

MR. EDITOR: I read with much interest your comments in the March JOURNAL on the teaching of the constitutions in the public schools, and the relation of the Institutes to the instruction in this subject. The reason for the failure of the

Institutes properly to meet this demand is not difficult to ascertain, and ought to be discussed. A brief glance at the Institute circulars for the past five years will show that provision has rarely been made for systematic instruction in this study. The conductors cannot be blamed for not presenting subjects which they are forbidden to introduce. Term after term and year after year they are sent out with a syllabus of primary and intermediate work, and teachers come again and again to a banquet of hash warmed over. From utter shiftlessness, and something of incompetency, the committee last year refused to prepare a new circular, but greeted the great body of teachers in this State with the same well-worn baby-talk and "Mother Goose Melodies." A finer illustration of heroic devotion to a good cause could scarcely be found than the sufferance of the teachers under such treatment. Petitions for advanced work in the Institutes have been treated with contempt and their advocates ridiculed. In the conductor's meetings the free expression of opinion has been checked by sneers and denunciations. A more tolerant and catholic spirit, that will listen to the suggestions of those who do not always tramp in the same little tow-path that others pursue, will do something to make the Institutes the "agency for the improvement of the school that they are supposed to be."

O. E. Wells.

Appleton, Wis.

INSTITUTES IN OTHER STATES.

B. A. Hinsdale, of Cleveland, offers in the *Ohio Educational Monthly* "Some Observations on Pennsylvania Institutes" from which we take the two or three paragraphs which present the most important variations from Wisconsin practices.

The Institute Season.—There lies before me a list of the Pennsylvania institutes for the last season, embracing these items: "County," "place of meeting," and "date." One institute is set for August, one for September, thirteen for October, sixteen for November, thirty for December, and two for January, 1887. October is a better institute month than December, but December is better than July or August. There can be no question that if Ohio institutes, as a whole, came later they would be much more effective. Save at the sea-shore, July and August are, *per se*, the worst institute months in the year; and yet the larger number of Ohio institutes fall in them.

Evening Lectures.—The evening lectures of an Ohio institute commonly relate pretty directly to the regular work, at least to education. The Pennsylvania usage appears to be a course of popular lectures and entertainments,—say three lectures and a concert. An effort is made to sell as many course tickets as possible to citizens; the teachers sometimes pay a reduced price for these tickets, and sometimes come in under the enrollment fee. Popular men are en-

gaged to give these lectures, and high prices are often paid them. The lecture course is, therefore, a decided feature of the week. I can see some objections to making the lectures so prominent a feature; but one of the good results is the large numbers of citizens who attend, and who are, in a measure, brought within the influence of the institute. On the whole, the yearly institute is much more of an event in a Pennsylvania town of 5,000 inhabitants than it is in an Ohio town of the same size. Here the tendency is for teachers and citizens to fall farther and farther apart.

Money.—The Pennsylvania county superintendent has much more funds at his disposal than the Ohio executive committee has. He receives $200 direct from the county treasury; and this sum is much increcsed by the teachers' fees and the proceeds of the lectures. A superintendent of a county like Summit, holding his institute in Akron, would have, if he managed his lectures well, $600 or $800 at least, at his disposal, ar d he would lay out his work accordingly.

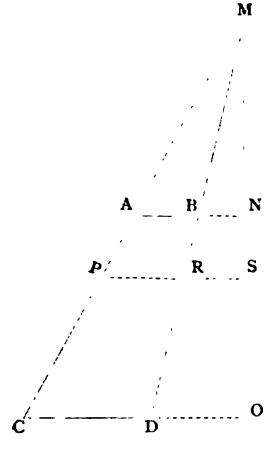
In New York the discussion over compulsory attendance at the institutes still goes on. At the meeting of the State Association of School Commissioners and Superintendents recently State Superintendent Draper spoke as follows:

"Institute work has met with wide-spread and out-spoken objections. Part of the villages have been in open rebellion against the law compelling attendance. This puts on us the obligation of making these institutes so valuable that teachers cannot afford to stay away. We may as well begin to understand first as last that no law will make teachers attend an institute not worth attending. I have said to the villages, withhold your opposition one year, and if during that time we do not make our institutes worth your while, then I will unite with you in repealing the law. The trouble with our institutes has been that they were picnics. A gala-day will do for a day, but not for a week. There has been no grip. I propose to make it necessary for teachers to attend institutes as regularly as they do their own schools, and that the exercises of the day shall be as methodic as in the best schools at home. Every effort will be made to bring forward the best instructors we can obtain. Our normal school men have taken hold, with mutual advantage to the teachers and to themselves. They have seen more practically and familiarly the needs of the schools of the State. We must have smaller institutes. In every case of a district institute the report has been favorable. Four hundred teachers make a mass-meeting, and definite work is impossible. We have tried the district institute; it has succeeded, and we are going to carry it into effect. As to help of local teachers, some are reported to say, 'We don't propose to put our unpaid work into competition with the paid work of instructors.' If there is any one thing that has stood in our way it is that every teacher has worked for himself and not for his profession. But I had a double purpose in calling on local teachers. They have been very free in their criticisms on the conductors, and I have thought they would be more sparing when they had opportunity to unload their wisdom on the platform."

MATHEMATICAL SECTION.

Will you please solve the following problem: How shall a board 12 ft. long, one foot wide at one end, and 2 ft. wide at the other, be cut by a line parallel to the ends so as to divide its area equally? E. P. H.

1. This question may be put more broadly, as follows: Where shall a line be drawn, parallel to the bases of a trapezoid, to cut off any required portion of its area?



Let A B D C be the given trapezoid. Complete the triangle C D M. Let C D be designated by B, A B by b, N O by H, N S by l, M N by h. Let K represent the fractional part required.

M A B, M P R and M C D are similar triangles. $\therefore B : b = H + h : h$; hence $h = \frac{b\,H}{B - b}$ and $M O = H + h = \frac{B\,H}{B - b}$. As $N S = l$, $M S = h + l = \frac{(B - b)\,l + b\,H}{B - b}$, altitude of M P R.

Area of $A B D C = (B + b)\left(\frac{H}{2}\right)$. $\therefore$ area $A B R P = \frac{K\,H}{2}(B + b)$.

Area of $M P R$ $M A B - A B R P = \frac{b}{2}\left(\frac{b\,H}{B - b}\right) \therefore \frac{K\,H}{2}(B - b) = H\left(\frac{b^2 + K(B^2 - b^2)}{2(B - b)}\right)$

$M P R : M C D = \overline{M S}^2 : \overline{M O}^2$, (Areas proportional to squares of homologous lines.) That is,

$$H\left(\frac{b^2 + K(B^2 - b^2)}{2(B - b)}\right) : \left(\frac{B}{2}\right)\left(\frac{B\,H}{B - b}\right) = \left(\frac{(B - b)\,l + b\,H}{B - b}\right)^2 : \left(\frac{B\,H}{B - b}\right)^2$$

Dropping denominators, canceling H from first couplet, B^2 from consequents, taking sq. root, and reducing, we have $(B - b)\,l + b\,H = H\sqrt{b^2 + K(B^2 - b^2)} - b$

$$\therefore l = \frac{H}{B - b}\left(\sqrt{b^2 + K(B^2 - b^2)} - b\right), \text{ and } \quad S O = H - l = \frac{H}{B - b}\left(B - \sqrt{b^2 + K(B^2 - b^2)}\right)$$

Applying either of these formulæ we find $S O = 5.05633$ and $N S = 6.97367$, approximately.

2. Will you please explain the solution of the following problem, which belongs to a class I have never understood very well: A man can row 4 miles an hour in still water, but requires 1:12 hours to row 4 miles up stream. How long will it take him to row 4 miles down stream? G.

The three elements involved in all such questions are rate, time, and distance, whose relations to each other are of course known. The only difficulty here is found in the fact that *three different* rates are involved. His rate up stream is of course less than in still water by just the rate of the stream. Let x = rate of stream, in miles per hour.

Then $4-x$ = rate up stream, and

$4+x$ = rate down stream.

$\therefore \quad \frac{4}{4-x} =$ 6 1-5ths, hence x is found, and

$\frac{4}{4+x} =$ time required.

Since this problem is found in a practical arithmetic, perhaps the class have not yet acquired the use of the equation, and for such pupils the following is suggested: The distance, four miles, being constant, has evidently no effect upon the answer. If a man, who can row a certain distance per hour in still water, requires 6-5ths of an hour to row the same distance up stream, in one hour he would only row 5-6ths as far; hence the stream retards him 1-6th of his rate. Then when going down stream, in an hour he would go 1-6th more than his usual distance, or 7-6ths, hence to go the same distance would require 6-7ths of an hour.

3. How can the following proposition be demonstrated? If a triangle A B C be formed by the intersection of three tangents to a circumference whose center is o, two of which, A M and A N, are fixed, while the third, B C, touches the circumference at a variable point P; the perimeter of the triangle A B C is constant, and equal to A M + A N. M.

Who will send a satisfactory solution?

T. B. PRAY.

WHITEWATER, WIS.

A SOLUTION IN ALGEBRA.

Some time ago Mr. Harper fired this innocent looking problem at his teachers: Given $x^3+y^3=341$ and $x-y=1$ to find x and y. It has been going the rounds of Grant county and the parts adjacent, and, judging from the tenor of letters that come to me about it, it has been causing no little "puzzlement," among the younger teachers and others having time to "wrestle with hard sums." I send you a solution which seems to me quite a neat one. So far as I have tested it, it seems to be sufficient for the solution of any problem in which the sum of the cubes of two numbers and the difference of the two numbers are given in decimal notation.

Given $x^3+y^3=341$ and $x-y=1$ } Find x and y.

Put $z + \frac{1}{2} = x$, and $z - \frac{1}{2} = y$. Then the 1st eq. becomes $2z^3 + \frac{3}{2} z^2 = 341$. Or $z^3 + \frac{3}{4} z^2 = \frac{341}{2}$.

Multiplying both members by z, $z^4 + \frac{3z^2}{4} = \frac{341z}{2} = 31\binom{11z}{2}$.

Adding $\binom{11z}{2}^2$ to both members, $z^4 + 31z^2 = \binom{11z}{2}^2 + 31\binom{11z}{2}$.

Completing sq., both members, $z^4 + 31z^2 + \binom{31}{2}^2 = \binom{11z}{2}^2 + 31\binom{11z}{2} + \binom{31}{2}^2$.

Extracting sq. root, $z^2 + \frac{31}{2} = \frac{11z}{2} + \frac{31}{2}$.

Whence $z = 5\frac{1}{2}$, $z + \frac{1}{2} = 6$ and $z - \frac{1}{2} = 5$.

A. J. HUTTON.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

A MAN should never blush in confessing his errors, for he proves by his avowal that he is wiser to-day than yesterday.—*Rousseau.*

FOR many purposes, nothing serves so well as the Socratic method of questioning. Its plan is to have the person who answers the questions make applications of his statements, and thus circumscribe them until he reaches the truth. For instance, a child says that a strait is a narrow body of water. The teacher shows him a river and calls his attention to its narrowness. The child then takes a new position by saying that a strait is a narrow body of water that does not flow. A second application is made this time to a long and narrow lake. By this process, his mind is thoroughly waked up, and he sets to work to discover the real distinction of the strait. He may say a long narrow body of water joining another body of water, etc. Finally the idea is restricted to its true meaning, viz.: a narrow body of water connecting two larger bodies of water.

CHILDREN are not sent to school to learn facts, but to learn how to use them. Facts, and plenty of hard ones, too, are lying in wait for them at every corner in life. Children can as easily store up a valuable amount of these in school-days as they can eat next week's dinner to-day. But to learn that the difference between a straight line and a crooked one is also the difference between straight dealing and crooked, even if only in the matter of an answer to a question; to learn, best of all, that this is a world where things go by laws, and that it is possible, to some extent, to find out these laws; this is worth time and study. It is a development of the faculties, that is worthy of the name of education.

"It is not what the best men do, *but what they are*, that constitutes their truest benefaction to their fellowmen. Certainly in our own little sphere, it is not the most active people to whom we owe the most. Among the common people whom we know, it is not necessarily those who are busiest, not those who, meteor-like, are ever on the rush after some visible change and work. *It is the lives* like the stars, which simply pour down on us the calm light of their bright and faithful being, up to which we look, and out of which we gather the deepest calm and courage."—*Phillips Brooks.*

SOME TEACHING DEVICES.

In Language Work.—1. Call on each child of the class in turn to give the name of something he has seen. For example, they may name a tree, a book, a wagon, a girl. Starting a second time, request each child to add a descriptive word to the name he has already given; as, a maple tree, a large book, a noisy wagon, a pretty girl. On the third round each pupil is to tell where his object was; as, a maple tree in a field; a large book on my desk; a noisy wagon in the road; a pretty girl in a carriage. This exercise may be extended by adding phrases; and other modification will suggest themselves.

2. Another device for developing the power to build many details into a single sentence is the following: The teacher writes upon the board a brief sentence, for the class to copy, as The horse runs. She then says, add a word telling what sort of a horse; another telling how he runs; a phrase telling where he runs; another telling why he runs; and so on. The various results secured will be interesting to the class.

In Geography.—1. Have the pupils "choose sides," as you have done many times, perhaps, in the old-fashioned spelling school of blessed memory. Have the leader on one side name a town and give its county, State, or country, as New Orleans, La. The leader on the opposite side gives the name of a town whose initial letter is the final letter in Orleans, as Springfield, Ill. The names will come rapidly for the first round, perhaps. When the speed begins to slacken, lap down the following rules: 1. Any one repeating a name already given misses. 2. Any one failing to give the State or country misses. 3. No one shall be entitled to more than one minute in which to find a name. There is something more than knowledge and fun to be gained from such an exercise.

2. Use topical recitation as much as possible, and after a pupil has recited as much as he can upon a given topic encourage other members of the class to ask questions upon the topic. When questions are asked which cannot be satisfactorily answered have them written down to be investigated and answered at the next recitation. Also encourage pupils to obtain information regarding any topic of the recitation from any source within their reach, and give opportunity for presenting this additional information after the topic has been recited

upon. To prevent confusion when much information is secured in this way briefly summarize it in single words or phrases, and sum it up before taking another topic.

3. Let a pupil write or tell lists of articles found for sale in groceries. Have this neatly written on the board in full sight of the pupils, as early in the week as Wednesday. Have it understood that on Friday afternoon, with the maps before the school, and with the books of reference near by, time will be spent in talking about these various things. From what countries they come, how they are produced, for what are they used, etc. Let all who can, find pictures to illustrate any of these points. The teacher needs to have a little supply of general knowledge, in order to direct the talk along certain lines. The tea, coffee, spices, dates, olives, flour, sugar, etc., will bring out many interesting ideas. It will assist this exercise if a large map of the United States, or of the world be outlined on the board. On this map let the names of various articles be written as nearly in the locality of their growth as possible.

IN ARITHMETIC.—1. Insist that each member of the class shall "make up" a problem involving the principles of the work in hand. The required problems must be concise, exact, original, of small denominate numbers, not intricate. At first the problems will be crudely made and reluctantly presented, but as the innovation grows into custom this all wears away, and the pupils take delight in making their own arithmetic. The principle becomes firmly fixed in this way, the technical terms thoroughly understood, and the relation of the terms apprehended and clear.

2. Let the pupil think of some number, but not tell what it is. The teacher is then to indicate certain operations to be performed upon it; as, multiply by 8, divide by 4, add 3, multiply by 4, subtract 6, divide by 2. When the pupil tells his result the teacher will tell what the number thought of was. To accomplish this she will take x for the number, and perform the same operations upon it as the pupil is told to perform. Her result will tell her what to do with the pupil's answer in order to find the original number. After a time show the class how the result is obtained and let them take the teacher's place in the work.

IN SPELLING.—It is important to form the habit of observing quickly the spelling of difficult words. The following device will serve to cultivate this: Let the teacher select several words likely to be difficult to the class, and write on the board simple sentences each containing one of these. Hang a map so as to cover the work. When the time for the exercise arrives, roll up the map so as to show the lowest sentence, and leave it exposed only long enough for the class to read it. When they have written it test the spelling of the difficult word. Proceed in the same way with the other sentences, making the time of exposure to view as brief possible. It is better that one or two fail to get the sentence than that the drill in accurate and rapid observation of details be lost.

PROBLEMS IN ARITHMETIC.

1. How many posts are required to inclose a quarter-acre lot of 66 feet frontage if the posts are placed 6 feet apart? Ans. 78.

2. How many 2-inch pickets, placed two inches apart, will inclose the lot in the last question? Ans. 1,386.

3. A box made of 2-inch plank is 3 ft. 4 in. long, 2 ft. 8 in. wide, and 1 ft. 6 in. high: it has no lid. How much will it cost to cover the box completely inside and outside with gold leaf at $2 per square foot? Ans. $1.00.

4. How many feet of lumber are there in three 1¼-inch 16-foot boards, whose breadths are respectfully, 12, 14 and 15 inches? Ans. 68⅓ ft.

5. How many feet of lumber are there in 100 pieces of 14-foot siding 6 inches wide? Ans. 700 ft.

6. What is the cost per yard of a 6-foot sidewalk of 2-inch plank, at $12 per M., laid on 3 stringers 3x4 inches, costing $10 per M.? Ans. 25 cts.

7. How much lumber is there in one gable of a barn 30 feet wide if the roof be third pitch? Ans. 150 ft.

8. Starting from Chicago, I go 200 miles due west, than 250 miles due north, than 100 miles due east, then 350 miles due south, then 100 miles due east, than 150 miles due north. How far and in what direction am I from Chicago? Ans. 50 miles south.

9. Two-foot wood is piled to the height of 6 feet. How long must the pile be to contain 3 cords? Ans. 32 feet.

10. At the rate of 124½ rods a minute, how many hours will a train be in going from Boston to Buffalo, a distance of 498 miles? Ans. 21⅓ hours.

LANGUAGE EXERCISES.

1. Express each of the following in at least two different ways, changing both the construction and the language:

The atmosphere is composed principally of two gases — oxygen and nitrogen.

His prices were higher than any other portrait painter had asked.

Water is indispensable to both the animal and the vegetable world.

The chief supplies of gold are obtained from California and Australia.

To the mariner the barometer is of great service by enabling him to foretell the approach of a storm.

2. Correct the following:

Did the boy that found the money return it?

I will go with you if I had time.

Sparkling water refreshed the traveler from a cool spring.

An attentive pupil learns easy.

Her mother asked you and I to come.

They that honor me I will honor.

It is a secret between her and I.

Let every boy answer for themselves.
Let anybody guess this riddle if they can.
Go and lay down and rest yourself.
What do you like best, cold meat or hot?
Mary, can I go with you?
For three days I neither ate or slept.
The boy fell in the river while fishing.
He don't live at Boston now.
The whole crowd were entirely broken up.
The ship and all her crew was lost.
The cat is laying by the fire.

3. Contract the following complex sentences to simple ones:

(*a*) It attracted the attention of all that were present.
(*b*) It is probable that he is not the author.
(*c*) He stayed with us while the trial was going on.
(*d*) Most of the painters whom she employed were foreigners.
(*e*) I did not hear the name of the gentleman who spoke last.
(*f*) When he was fourteen years old he was apprenticed to a printer.
(*g*) I can't let go unless he gives permission.
(*h*) When he learned how much it was worth he was greatly elated.
(*i*) The age in which we live is noted for marvellous inventions.
(*j*) He felt inclined to doubt whether the statements which the lecturer had made were correct.

4. Write single words or expressions for each of the groups of three words in the following paragraphs:

Wheat, oats, barley; potatoes, onions, celery; mustard, ginger, pepper; pens, paper, lead-pencils; iron, lead, tin; tweed, flannel, print.

Hawks, eagles, condors; cheese, butter; coffee, sugar, tea; camel, ox, goat, sheep; wood, coal; beer, tea, water; powder, shot, cartridges; wagon, cutter, sleigh.

Rifle, revolver, gun; coffee, tea, kerosene, cider; kindness, benevolence, truthfulness; drunkenness, murder, theft; tables, chairs, stoves; chess, quoits, croquet.

5. Combine into not more than ten sentences:

Once the weather was very dry. A crow was thirsty. She searched everywhere for water. She could not find a drop. She was croaking for sorrow. She spied a jug. She flew down at once. She eagerly pushed in her bill. It was of no use. There was plenty of water in the jug. She could not reach it. The neck of the vessel was so narrow. She tried for half an hour to reach it. It was in vain. She attempted to tip the jug over. It was too heavy for her. She could not stir it. She was in despair. She was on the point of giving up. A new thought struck her. It was to drop stones into the jug. Then the water would rise higher. In time it would rise to her bill. She was nearly fainting with thirst. She set bravely to work. She dropped in stones. Each time the water rose. Not half an hour passed. The clever crow had drunk her fill.

OUR BOOK TABLE.

TWO DRAWING MANUALS.

Two manuals on drawing which lie before us illustrate the progress now making in developing the usefulness and suggestiveness of this branch of study. The first of these is entitled THE USE OF MODELS: a Teachers' Assistant in the use of the Prang Models for Form Study and Drawing in Primary Schools. (Prang Educational Co., Boston; 190 pp.). The fundamental idea of the volume is to make form study in the primary school thoroughly objective, by causing the pupils to gain their elementary notions through the combined action of touch, sight, and the muscular sense; and, on the other hand, to develop their power to express this knowledge through language and through drawing. This idea is in accord with the teachings of modern pedagogy. This method of learning corresponds with the natural instincts of the child, which are systematically directed by the teacher, and gives rise to real, complete and definite knowledge of the elements of form. The instinct to turn new knowledge to account, which is so constantly manifested in the plays of children, is made use of by leading them to produce and enjoy beauty of form and of arrangement as they create them, by modeling, cutting, folding and drawing; and is still further directed to giving a free and fitting use of language to express the ideas which interest them. The book, and the models whose use it is designed to explain, are adapted to the first and second years' work of the primary school.

The other book is KRUSI'S DRAWING MANUAL FOR TEACHERS—Analytic Series, (D. Appleton & Co., 209 pp.). It is a study of the principles of design, followed by a progressive series of exercises in the drawing, first of mathematical forms, and then of natural forms conventionalized, as they are used in decorative art; leading up to the construction, according to correct principles, of complex ornamental designs. The work is therefore adapted to more mature pupils, whom it introduces to a somewhat reflective study of drawing, which is no longer a merely mechanical art, nor even merely imitative, but calls for the intelligent application of somewhat complex principles, and for original inventive work. The author says: "Drawing is a universal language. In all instruction the two primary objects to be kept in view are, power to express an idea, and power to understand a drawing. The course should be elastic; some pupils are reached through the understanding, others through the natural taste. Vary the instruction, giving it from both points of view, scientific and artistic." It is this view of drawing as an instrument of expression and also an instrument of culture, appealing both to the taste and to the understanding, which deserves emphasis. The book is replete with practical sugestions for the formation of correct habits and for detailed class-room work, which we commend to the attention of practical teachers of drawing.

—ANATOMY, PHYSIOLOGY AND HYGIENE: a manual for the use of colleges, schools and general readers, by Jerome Walker, M. D. (Midland Publishing Co., Madison, Wis., 415 pp.), is one of the books recommended for use in the schools of the State by the State Superintendent and the State Board of Health. It seems to us an eminently practical and useful book. It has grown out of the lectures of a practicing physician in the public schools of Brooklyn for eight years, and many of the chapters have been revised by specialists. The purpose of its author has been to cover all points important for the general student, and to omit such as are likely to be of little value to him. Besides the excellent presentation of general physiology and hygiene the book contains two features of especial value—the full and practical chapter on Emergencies and what to do in them, and an appendix of notes illustrative of the text. These are for the most part brief extracts from important works, and are so well chosen and so suggestive as to be worth the price of the book. The mechanical appearance of the book is deserving of especial praise and its illustrations are admirable. The Midland Company publish other excellent books, as will be seen by their advertisement on another page.

—WORMAN'S SCHOOL ROOM FRIEND, by Prof. E. B. Worman, (Chicago, W. Harrison; 121 pp.) is a book of practical suggestions on reading, reciting and impersonating, to which is appended a lecture on True and False Elocution. The author says that his work is not a treatise on elocution, and recognizes the faults which have brought disrepute upon professional reading and professional training in that subject. His suggestions are carefully considered and keep within the range of good taste. They are valuable to the public speaker as well as to the teacher.

—SOME CURIOUS FLYERS, CREEPERS, AND SWIMMERS, by James Johonnot, (D. Appleton & Co.; 224 pp.) concludes the admirable series of supplementary natural history readers prepared by its author. It is like the others in plan, full of fresh and entertaining matter, and adopted to fourth reader pupils, whom it can hardly fail to interest in natural history.

—LATIN WORD BUILDING, by Charles O. Gates, (D. Appleton & Co.; 160 pp.) furnishes one means of more effectively teaching the Latin vocabulary, which is now recognized to be of great importance. The author's plan is to select the more important root words, learn their exact meaning, and afford abundant practice in applying them to ascertain the meanings of compounds. His book furnishes abundant materials for this work and for drill on inflectional forms.

—D. C. Heath & Co. are publishing a valuable series of OUTLINE MAPS for the use of geography and history classes. Ten of them are before us. The outlines are faintly sketched upon firm paper, and admirably adapted for class use. In geography physical features, productions, population, geology, climate, etc., may be developed upon the maps by the use of shading and color. In history, changes of states, marches of armies, routes of explorations, etc., may be represented. The value of such exercises to a class will be readily appreciated by practical teachers. In addition they issue a valuable large outline map

of the United States in four sections, each 26x42 inches, on which the locations of the principal cities are indicated by dots. Small maps of the United States 11x18 inches are also furnished for use of the class. These are printed on white, tough paper in blue ink. It would be difficult to name a more valuable teaching instrument in history and geography than these maps.

—ELEMENTS OF ENGLISH, by George H. Ricker (Inter State Publishing Co., Chicago; 100 pp.) consists of lessons on the parts of speech and the simple sentence adapted to youug pupils It also contains lessons on spelling, punctuation, capitalizing and letter writing.

—D. C. Heath & Co., issue, in a little pamphlet, Dr. Luce's SYNOPSIS OF THE NATURE AND EFFECTS OF ALCOHOL AND NARCOTICS, presenting in brief outline, the chemical nature, physiological action and pathological effects of these drugs. 28 pp.

—LITTLE SPEECHES FOR LITTLE PEOPLE, (Chas. A. Bates, Indianapolis; 10cts.;) is a pleasant collection of short poems for primary pupils.

—PALMER'S PIANO PRIMER, (H. R. Palmer, New York; 192 pp.) comes with the hearty commendation of several pianists of national repretation. It treats of the rudiment of musical notation, and piano forte technique, and presents such valuable aids as Schumann's 68 rules for beginners, Czerney's Letters or the art of playing the piano forte, etc.

—HOME AND SCHOOL SONGS, by Louis C. Elson (Inter State Publishing Co.; 64 pp. 40 cts.) is an attractive illustrated book of simple songs for young children, many of them exercise songs, marching songs and imitative songs.

—ANNOUNCEMENTS.—D. C. Heath & Co. will soon add to their Monographs on Education, a paper by Prof. J. F. Gernung of Amherst College, on *The Study of Rhetoric in the College Course.*—The same house will publish May 1st *The Earth in Space*, a manual of astronomical geography, by E. P. Jackson.—Thy also announce a new edition of Prof. Shumway's *A Day in Ancient Rome*, of which nearly forty thousand copies have already been sold. It is a vivid and captivating description of the ancient city, and fully illustrated.—Ginn & Co. will issue in April the *Adelphi* of Terence, with stage directions, by Henry Preble, instructor in Harvard College.—A literary curiosity for students of Skakespeare is soon to appear, in "The Legend of Hamlet," prepared from original researches among old manuscripts, hy the late George P. Hansen, formerly consul to Elsinore. Mr. Hansen's researches show that the original of Shakespeare's character was somewhat of an untamed savage, who lost very little time in deliberating on questions of philosophy. CHARLES H. KERR & Co., Chicago, are the publishers.

MAGAZINES AND PAMPHLETS.

—The *Library Magazine* for March presents a most attractive table of contents, and at one dollar per year is a marvel of cheapness. We name only two

or three of its attractions: Mr. Gladstone's Locksley Hall and the Jubilee; Aggressive Weeds by Grant Allen; Prof. Caird's Goethe and Philosophy; University Education in the United States, by Pres. C. K. Adams, etc.

—*St. Nicholas* maintains its place at the head of magazines for young people. The April number is full of attraction among which we reckon Olive Thorne's article on Working Monkeys; Miss Pennell's Harrow on the Hill; Gen. Badeau's Story of the Merrimac and the Monitor, etc.

—*Education* for March opens with an able plea for Poetry in Education, from the French of Felix Pecaux; The Foundation Principles of Government; English Grammar; The History of the Civil War; Old and New Methods of Teaching Latin, are other thoughtful papers. This is probably now the leading educational magazine in America. Its publisher, Wm. A. Mowry, of Boston, has also lately established *Common School Education*, a very attractive monthly for common school teachers which is meeting with well-deserved favor.

—In the April *Atlantic* Edmund Kirk's A Suppressed Chapter of History, which tells the story of an effort to negotiate for peace made with Pres. Lincoln's approval, and Miss Guiney's amusing sketch of A Tory Parson, will attract attention first. Besides these are Holmes' Hundred Days in Europe, Miss Miller's A Mocking Bird's Nest, Russia in Asia, General McClellan, etc.

NEWS AND NOTES.

—In the Wisconsin Summer School for Teachers, to be opened at the State University about the middle of July and continue for four weeks, the instruction in physiology and zoology will be under the charge of Prof. Birge; Prof. Daniells will have the chemistry; Prof. King, of River Falls, the physics and botany; Prof. Heritage the Latin, and Prof. Stearns the psychology and general methods. Such arrangements will be made as to afford ample opportunity for laboratory work and the use of libraries and other educational facilities of the city. It is hoped that the establishment of this school during the present summer will have an immediate and beneficial effect upon the teaching; especially of science, in the high schools of the State.

—A bill has passed the Legislature appropriating two thousand dollars to meet the necessary expenses of an educational exhibit from this State at the National Educational Association in Chicago this summer. Although the sum is less than seemed desirable, it still renders a worthy exhibit from Wisconsin possible. Now everything depends upon the activity and earnestness of school officers and the committees appointed to arrange and supervise the work. What is to enter into the exhibit? Not examination papers merely or chiefly. Some of these to show school work may be valuable, but a library of examination papers is not likely to receive attention, and has really little value. Other things show the school quite as well, even better — catalogues with courses of study, catalogues of libraries, inventories of apparatus, photographs or engravings of school buildings, specimens of drawing

with plan of the work pursued in the school and its use in other branches of instruction, penmanship so arranged as to show progress of pupils, language work so as to show plan and character of the work, special aids to teaching which have originated in the school, and so on. It is hoped that the industrial exhibit, the kindergarten exhibit, that of the Normal Schools, and of the various State schools will be especially full and interesting. It is hoped that all who labor for the exhibition will bear in mind the limited sum at the disposal of the committee, and plan with a view to wise economy of expenditure.

—At the National Association only one topic will be considered at a session and ample time allowed for discussion. The topics for the general association are: The Psychological and Pedagogical Value of the Modern Methods of Elementary Culture, by Dr. Thomas Davidson, of New Jersey; The Art and Method of Questioning Adapted to Ordinary School Work, by Supt. J. M. Greenwood, of Missouri; Questions Suited to Test and Examination Exercises, by J. J. Ligert, of Tennessee; Educational Influences and Results of the Ordinance of 1787, by Dr. I. W. Andrews, of Ohio; The Relation of the University, College and Higher Technological Schools to the Public System of Instruction, by Pres. Angell, of Michigan; Manual Training, by Gen. Francis A. Walker.

—The railroads will sell teachers and all school officers going to the National Association "round-trip tickets" from all principal stations, to Chicago and return, for *one fare*, plus two dollars ($2.00) to pay for a membership coupon. Tickets good going from July 5 to 15, and returning to Sept. 10, inclusive. Excursions are arranged to Alaska, Pacific Coast, Yosemite Valley, Yellow Stone Park, Lake Superior region, Omaha, Denver, and all Rocky Mountain poins, Mexico and all Southwest sections, at very low rates. It is also expected that excursions eastward from Chicago to Niagara Falls, Chatauqua, Saratoga, White Mountain region, and all points on the St. Lawrence River and in Canada, will be arranged.

—The Nicollet high school has a library fund which is steadily adding valuable volumes to the library shelves. During the winter months a successful evening school has been maintained.

—The Council Proceedings of the National Educational Association at Topeka came to hand early in March. The Council is wise probably, but certainly not enterprising. It takes seven months for its officers to get out a pamphlet of 84 pages—from July until the following March! And yet they levy a special tax on members in order to issue the proceedings promptly, before the Association reports! If this is promptitude, pray what would deliberation be? As a record of the proceedings the report is very meagre. It contains the papers but only such brief notes of the valuable discussions upon them as serve to show principally who took part.

—In the report of the public schools of La Crosse, just issued, Supt. Hardy says: "The Board has recognized the desirableness and the value to the schools of special preparation for teaching, by making the wages of a graduate of the high school who attends a normal school one year and then becomes a teacher in our schools, seventy-five dollars more per year than the wages of one who does not take such course. Has not the time come when it is best for the Board to take more advanced ground on this question, and *require* some professional training for teaching."

—The *Spartan*, published by the Sparta high school, has a spicy article on The Schools and the Boys, from which, we clip the following: "In the Sparta high school the boys outnumber the girls. In the lower departments this fact still remains true. But in the lowest primary departments the girls, this year, far outnumber the boys. The question which agitates the *Spartan* is 'Where are the girls?' and it can think of no answer more satisfactory than this one, they are in the primary departments. Years hence, when the grades now forming in the primary departments reach the high school, the girls will outnumber the boys. Then some wiseacre will come forward and proclaim, that something is wrong with our system of education, which has driven the boys from the high school, when, in truth, they were not there to be driven away. We do not think that the Sparta high school is an exception in having more boys than girls. The writer has been connected with several high schools in the State, and in each of them the boys often exceeded the girls in number, and then, at times, the girls would be in the ascendency. This excess was more often determined by the relative proportion of boys to girls in the grade promoted into the high school, than by any other cause."

—The attendance at Albion Academy during the winter has nearly reached one hundred. Under the management of Prof. S. L. Maxson the school seems to have entered upon a period of prosperity.

—The Tremont House in Chicago will be the Wisconsin headquarters during the session of the National Educational Association.

—The following committees have been appointed by the general committee of the Wisconsin Teachers' Association on the National Association: City Schools: W. E. Anderson, W. H. Beach, Albert Hardy. District Schools: E. C. Wiswall, Mrs. J. C. Sherwin, Henry Severin. Industrial Exhibit: J. K. McGregor, E. R. Smith, L. H. Clark. Kindergartens: Mary J. McCullough, Helen M. Dewey. State Schools: A. O. Wright, J. W. Swiler, Mrs. Sarah F. C. Little. University and Colleges: W. C. Whitford, Alexander Kerr, A. W. Burr. Normal Schools: The presidents of the five schools. Business Colleges: R. G. Deming. C. H. Keyes has been appointed general manager of the exhibit.

—Prof. R. D. Salisbury, of Beloit College, expects to leave for Europe at the close of the spring term, and to spend a year or two abroad in study.

—A series of very interesting teachers' meetings have been held during the winter in Vernon county. Occasional programs which have come to our hands show that the subjects discussed were timely and practical. The attendance has been large, reaching on one occasion one hundred and fifty. The teachers bear witness to the interest and profit of these gatherings.

—Prof. Albert Markham, of Milwaukee died suddenly the last of February. He has been long identified with the educational interests of Wisconsin and Milwaukee, through the Academy which bore his name and which he founded and built up. He devoted some of the best years of his life to this institution, which, under his management, acquired an excellent reputation for scholarship. The institution, we understand, is to pass under the charge of Prof. C. H. Hutchins, for so many years superintendent of schools at Fond du Lac, a man well suited for the position.

—Supt. Hoskins, of Jackson county,

makes a suggestion in his circular announcing the spring Institute which seems to us worthy of wide currency. He says: "If you expect to be present at the Institute, prepare a list of questions which are not satisfactorily answered in the books accessible to you. Let the questions be practical, and relate to your work in regard to methods of study, teaching, school government, or school law. Bring the paper with you, and retain it the first four days. If any questions remain unanswered, hand them to me, and, after classifying them, I will present them to Prof. Gillan, who will doubtless give the desired information."

—The new law regarding Teachers' Certificates, passed by the Legislature still in session, provides that a second grade certificates shall be good for two years instead of one, and a first grade good for four years. It also gives the superintendent power to refuse a certificate to candidates whose character is not above reproach, and authorizes him to accept the ranking given in another county when in his judgment it is desirable to do so.

—We quote another paragraph from Supt. Hardy's report of the high school: "The introduction of more elementary science in the first year, with illustrative and practical experiments, performed by the pupils themselves, has not only aroused and stimulated the pupils to more earnest and correct habits of thought and study, but it has also had the effect to hold them longer in school, especially the boys."

—Prescott has already commenced the construction of a new high school building, to cost $15,000, and to be provided with the best modern apparatus for heating and ventilating.

—What of the township high school? Our eye has fallen on the following paragraph regarding the new one at Little Wolf, occurring in the report of Supt. Wells: From the day the vote was taken to the opening of the school the pupils of the village and district schools set to work earnestly to prepare for the entrance examinations, and with such success that the first trial secured the requisite number for the organization. Others have since been admitted on similar terms, and we have now about 35 pupils receiving instruction from a graduate of the full course. at Whitewater. No other single measure within my observation has awakened such interest or enthusiasm in the schools, or caused such vigor in and relish for study." Good.

—The high school at Delavan has lately added some fifty volumes to its library. The library now contains 288 volumes.

—The Merrillan high school has lately added twenty-five dollars worth of books to its library, and purchased seventy-five dollars worth of apparatus.

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WISCONSIN

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ABOUT SCHOOL DISCIPLINE.

Discipline is the means by which instruction is rendered possible, and is an instrument of education in itself. As the first, it secures order, the prime necessity of school. "That is the best order in which the best work can be done." It is not a matter of silence. Work is the standard. It is the duty of the teacher to create such conditions that the greatest results may be attained with the least effort. Such conditions do not exist where noise, lawlessness, and whispering are prevalent; where pupils are listless and inattentive, not responding cheerfully and promptly to every requirement; or where a teacher's strength is wasted by *continual effort* to secure discipline. It is surprising how the entire machinery of school may be clogged, a teacher's powers wasted, and her efforts thwarted by inattention to these details; and, if greatly neglected, school becomes but a place of torment to all concerned.

Discipline is also an instrument of education. When the State makes education compulsory, she consideres it a preperation for citizenship; but the good citizen must have a well disciplined life as well as a knowledge of arithmetic. In the broadest and most important sense, discipline is character-building. Education has been defined as the development of character. Vastly more important is it to train character than to train in mathematics. A life aimless and selfish, unhappy and rendering others unhappy, is pitiful. A life should be "pure in its purpose and strong in its strife," that "all life might be purer and stronger thereby." It is possible to educate villains. Ignorance is bad enough, but immorality and crime are worse. The life needs a regulator, and that regulator is principle. It is made firm through habit. We are

said to be "bundles of habits," and these result from single acts. The teacher does well to bear in mind the old saying, "Sow an act and reap a habit, sow a habit and reap a character, sow a character and reap a destiny." Even destiny is in the hands of the builder of character. School discipline must train the good and root out the evil. The pupils must through habit become truthful, honest, self-sacrificing, unselfish. It is the province of education to "unselfish mankind." Habits of order, neatness, punctuality, and obedience must be formed. To obey is the first duty of the citizen. The child must learn to be diligent, for the drone is of little account in this work-a-day world. The power of attention is the chief essential of all education and discipline, and mental power amounts to little with the manners of a boor. Politeness is called an air-cushion which helps on wonderfully; but many will never learn it elsewhere than at school. Most important of all, the pupil must acquire that governor of life—self-control.

The formation of these habits will be apparent by the tone of a good school, will be manifest in the atmosphere of the school room, in the very gait and manner of the pupils even when on the street and not under the constraint of school discipline. More than all, it will be shown by a high sense of honor in the pupils, and by their love for their work and zeal in pursuing it.

But a different tone is sometimes apparent. Pupils are listless, sly, and inattentive; are sometimes lawless, impudent, and even rebellious. The manners of the street infest the school halls, and creep into the class-room. Study hours are spent in a manner foreign to real work, and pupils are actuated by the principle that the one who can do most mischief and glide on with the least work is the smartest. Such pupils are forming habits utterly demoralizing, and are acquiring no true mental culture. Seeking only pleasure, governed by impulse and selfihness, they may become worse than useless members of society. A school fallen into dangerous habits needs to be held with a firm, rigid, yet gentle rule.

True discipline is not arbitrary. An author says, "True rational discipline does away with all need of arbitrary discipline." The teacher should enforce his will because he wills what is right, not because it *is* his will. It has been remarked that a boy's will is often broken by forcing him to do *the right*. In this way authority will not be found clash-

ing with the pupils, nor will explanations of requirements be often necessary.

True discipline is not severe. The idea that a rigid discipline is severe is, though prevalent, a mistaken one. Severity is but a confession of weakness; its success in any case is but temporary and the mischief wrought by it is incalculable. Teachers maintain that liberty should be granted pupils. Yes, there should much liberty for all right doing, for courteous manners, for the formation of correct habits; but little for the reverse. A republican form of government is good in theory, but since the qualifications of the self-governed are intelligence and self-control, in practice, a monarchy is necessary in the school room. As the enforcement of the civil law touches the evil-doer, so restraint in the school room falls upon those who do not restrain themselves. The requirements necessary to produce the most effective conditions of work may appear to infringe somewhat upon individual freedom, but in school as in society, the individual must yield to the general good.

True discipline is not disliked. It is another mistaken idea that hostility must exist between a rigid disciplinarian and his pupils. If discipline be properly exercised, there is no reason why the kindliest relations should not prevail. Restraint may be felt for a time, but pupils soon adapt themselves, and learn to love a condition of successful work. It is a vicious system of discipline which is uniformly irksome, and which is disliked.

There are external conditions of discipline nearly indispensable. Such are, suitable buildings; freedom from over-crowding; proper means of heating, lighting, and ventilating; suitable furniture, and a good organization. It is impossible to maintain good order when pupils are suffering from physical discomfort, when they are crowded in close quarters, when they are improperly classified, or when the order of exercises would seem to be contrived to secure a maximum of noise and interruption. All the arrangements of school are of importance as regards discipline.

The good disciplinarian secures a healthful tone, the formation of correct habits, and makes his will felt, all without apparent effort. Such a teacher seems to possess some rare gift; but he has only learned "the art of concealing art," an art which may be acquired. It is the poor disciplinarian who constantly gives commands or reproofs, who repeatedly calls for attention, and interlards his teaching with individual cor-

rection. The best discipline is secured through the least apparent effort.

There is no *method* of discipline. Love and fear are much discussed, but fear only keeps out of mischief, does not train character; and love alone never controlled a school, nor moral suasion, nor method; perhaps all combined in the personality of the teacher, form moral constraint.

Discipline is largely formative, rather than reformatory as we are apt to consider it. Did we spend more time in forming, there would be less to reform. Habits of respectful attention and politeness would prevent inattention from developing into lawlessness, impudence, and masked if not open rebellion. If pupils were taught to love their work, dislike would not culminate in idleness and truancy. We strive vainly to suppress the result of habits formed under our eyes, to crush in its huge proportions what we may have fostered in its elements. Are we content to go on building with one hand while we tear down with the other? Says an eminent teacher, "Seek from the beginning to form correct habits, and then there will be no occasion to reform bad ones." Careful fore-thought will largely prevent the occasions of discipline. To this end, the teacher carefully plans his organization beforehand, looks after the comfort of the pupils, sees that materials of work are in place before they are wanted thus preventing the need of questions.

Systematic drill is a great aid. Under this head may be classed the systematic going to and from classes, the passing of books and pencils, marching, motion-songs, calisthenics, and the like. There must, of course, be prompt and perfect action. A teacher who has felt the working of these things, need not be told their desirableness. They form the habit of prompt and automatic obedience, which indeed might be carried too far for the development of self-control, but there is little danger.

A great means of discipline is to inspire the pupils with the spirit and love of work. "Give a pupil a sense of pleasure in his work," says an educational writer, "and idleness will be cured, and arbitrary discipline will be obviated." Much is made of busy work in the primary room of to-day. It is the idle who employ themselves in mischief. As a sacred duty, the teacher must so teach that the pupils will love their work. To this end teachers must have skill, must use the best and most natural methods, but more, must do real, earnest teaching. They will not in-

cite study by compulsion, nor work against everything by assigning lessons as punishment.

Attention is a matter both of education and discipline. Colonel Parker has said that primary education consists in the development of the power of attention; and is not the varying ability of men more largely due to this power than we sometimes think? The main difference between reading and study is in application. The poor habits of study and inability to make application so prevalent, are largely due to imperfect training in this respect. At first, the power of the child over his will is very slight, so we appeal to involuntary attention by means of pleasing and attractive objects. By judiciously appealing to involuntary attention and ever making a moderately increasing demand upon voluntary attention, the habit of attention is formed.

The exercise of discipline must be just, kind, regular, courteous, and natural. Justice is the foundation of all good government. Injustice often arises, not through intention, but from varying purpose, disregard of circumstances, or unreasonable demands.

Irregular discipline works mischief. Rules once laid down must be adhered to as laws of nature. The principle requires school discipline to be a unit. Teachers in the same school must work together for a common purpose, or the school becomes demoralized.

The teacher must be courteous to his pupils, and they to him and to each other. Children may be greatly influenced by the motive of politeness. Nature is the best teacher. Non-conformity to her laws results in up-hill work. She efficiently teaches the child through play. The modern primary teacher wisely continues the method, and the teacher of any grade renders work as attractive as possible. The law of activity must be observed. The child *must* be active. If busy work be not supplied, he will find it in play. The principle of Comenius, "We learn to do by doing," is but the embodyment of a natural law. The teacher does wisely who observes it, either in discipline or instruction. The law of frequent change leads the primary teacher to shorten recitations.

The teacher must have a definite way of doing things, will see that all directions are obeyed, and will make no law he cannot enforce. He will not threaten. Laws beforehand are a confession of weakness.

Punishments must needs come. Law without penalty is worthless, and effective in no case unless the penalty is sure. The design of pun-

ishment is twofold, to reform the offender, and to deter others from offence. Severe penalties are often obviated, if, in the matter of correction, the principle of repetition be observed. It is often the easiest and most effective method of producing better conduct. In affixing punishments, it is well, as Spenser suggests, to follow nature as far as possible, and leave the offender to suffer the result of his own mis-doing. Most teachers agree that corporal punishment is necessary in extreme cases. An occasional boy respects nothing but muscle. Expulsion has been largely adopted as a substitute, but, in such cases, the boy is often lost to all hope of better doing. The individual is sacrificed to the good of the whole, but were it not better to save the school and the boy too, even by the rod? Said an experienced teacher of our time, "It is worth while to live a lifetime to save a boy! Never expel a pupil whom you would not if he were your own brother."

The teacher must be master of self. It is well said, one cannot command others till he can command himself. Hannibal could obey as well as command. Seneca said, "That person is of all others the most powerful who has himself in his own power."

The end of all true discipline is self control. It is a vicious doctrine that the child should do as he pleases. At first, right doing comes to the pupil in the concrete will of the teacher. He must be lead into it, forced if need be, then after supplying proper motives, a degree of liberty is granted him. In this way, he is lead to control his own acts wisely. Gradually as impulse comes under control, and reason develops, higher motives are supplied, and more and more liberty granted. Self-control is the substitution of obedience to principles for obedience to persons. Says a writer, "Give self-control and you give the essence of all well-doing in mind, body, and estate. Morality, learning, thought, business, success—the master of himself can master these." Bacon says, "The worst education which teaches self-denial and self-control is better than the best which teaches everything else but not these."

Ella J. Taylor.

WAUSAU, WIS.

AN ARGENTINE COLLEGE.

In the Argentine Republic education is divided into primary, secondary, and higher. Institutions whose aim is to furnish secondary education are known as colleges. The national government maintains and

directs the secondary and higher or university education, while, by provisions of the constitution, each province or State, as a condition to the enjoyment of the protection of the central authority, is required to maintain a system of public schools for primary instruction. It is thus seen that education is wholly in the hands of the government, State and National, which not only make the necessary laws for its regulation, but found the institutions devoted to it, build or rent the edifices required, pay the instructors, and even furnish the books, slates, and other utensils of the schools. Education, in short, is a distinct department of governmental functions, and the title of one member of the President's Cabinet is, "Minister of Justice, Religion, and Public Instruction."

Under the immediate direction and control of this minister are fourteen national colleges, one in the capital of each of the fourteen provinces which constitute the Republic; one University—the oldest in America—located in the city of Cordoba; an Agricultural College; a School of Mining; a School of Commerce; an Astronomical and Meteorological Observatory; two National Normal Schools; and the Normal Schools for girls.

I have before me the plan of studies and the regulations for examinations in the National Colleges. It is an octavo volume of 340 pages, and details with the utmost minuteness what is to be taught in each study during each term of the six years' course. It is prepared with a view to its use by the examining committees appointed by the government at the end of each school year, and is, in short, a sort of catechism upon the whole course, to be employed as a manual in questioning the classes. As it is in the hands of all the students, it is a convenient instrument for cramming, and doubtless smooths over many a rough place in the pathway of learning. The studies of the first year in this course are Arithmetic, Geography, Grammar, English, French, and Sacred History, and correspond pretty nearly to those of an advanced class in our Grammar Schools. The course is heavily overloaded. The lad of fifteen who enters one of these Colleges, is expected to graduate at twenty-one with a knowledge of English, French, German, and Latin; of Algebra, Geometry, Trigonometry, Surveying, and Analytical Geometry; of Physics, Astronomy, Chemistry, and Natural History; of General History, Philosophy, and Literature; of Drawing, Bookkeeping, and Music.

It is not by any means to be inferred that every youth who escapes

with a diploma from these institutions is an "Admirable Crichton." Indeed, sound scholarship, whether in an individual or a nation, is a plant of slow growth, and these colleges are very young. The most of them have been created within the last twenty-five years; they are managed by a government at a great distance from them, and in the emotional stage of development, in which lofty aspirations are supposed to produce grand results as naturally and unthinkingly as an apple-tree bears apples; and worse than all, they are "in politics," and are popularly believed to have played an important part in the election of one President of the Republic, who reached that honor from the position of Minister of Public Instruction. One thing more must be said of them: in the interior, they are often but primary schools with a college organization — the greatest of educational blunders. This has come about inevitably: as there were no schools to prepare pupils for their courses, it became necessary to open preparatory classes. In many cases, the college has not yet emerged from this chrysalis.

The intermal organization of these institutions is very elaborate. At the head of each is a Rector, who has a Vice-Rector as assistant and substitute, and is not expected to teach any classes. There is then a Prefect of Studies, who looks after the programme, the recitations, reports, etc., and who has a secretary to aid him. From four to ten Celadores watch over the conduct of the students, and administer reproof in the first instance, reporting graver offenses to the Vice-Rector. If, as is usually the case, students are received to room and board in the college building, there must be an Econom to superintend the household. From fourteen to twenty professors are employed to teach the classes, and doorkeepers and servants according to circumstances.

Of the discipline of these institutions I shall perhaps give a correct impression by summarizing a few particulars from the report of the Prefect of Studies to the Rector of the National College of Tucuman, for the month of August, 1877. The total number of pupils in attendance during the month was 129. Of these there were only eleven who had not been absent from a single recitation. Five have upward of 50 absences during the month; thirty-nine have upwards of 20 and less than 50; and forty-eight have between 5 and 20. The comment of the Perfect is certainly mild enough in view of these facts: "The absences are numerous, and most of them without excuse. It is to be regretted that the parents, notwithstanding the monthly publication of the absences of

their sons, do not try to remedy it." Equally significant is another series of facts: the Prefect reports on the application to study of the pupils, and finds twenty-one who have none whatever, and forty-seven others who have very little. In these two classes are included more than half of the whole number of students.

From the report it appears that the principal punishment known in the institution, is to shut up delinquent pupils in the prison—a dark, bare room, with one small, grated window. This seems to have been used frequently if not discreetly. The offenses assigned are bad conduct and lack of application to study, and the number imprisoned dur- this month, for periods varying from two hours to thirty-two, was thirty-six; and the hours of imprisonment of these thirty-six, amount, all told, to 323. Such discipline is vigorous—or demoralizing.

Let us for a moment enter this National College of Tucuman. It is a two-story brick building, over-laid with stucco, and calcimined blue with white trimmings. The front comes close up to the narrow sidewalk, and the buildings on either side stand close up to the college. Stop before the entrance, and what you see will remind you of pictures of the House of the Great Fountain in Pompeii, or of far Oriental interiors. Here is a long hall with rows of columns on either hand, and, beyond, an open court, around which stand numerous columns supporting a corridor, and within are vines, fountains, trees and flowers. The building is, indeed, constructed around the court, after the usual Argentine manner of building, and the recitation-rooms, cabinets, libraries, etc., open into this charming enclosure. Only the front is of two stories, and access from one room to another must be sought through the open court—no inconvenience in that warm clime. Should you visit those rooms, you would find the best chemical and physical apparatus, cabinets of geology and natural history, a drawing room well supplied with models and other conveniences, and an excellent library of Spanish and French books, with a few in English and German. The government has indeed been lavish in supplying these institutions with apparatus, brought from Europe at great expense, which is generally kept in admirable order, but bears no evidence of having been used. Some time it will be realized that libraries and cabinets do not make colleges. According to the estimates of the Minister of Public Instruction, the College of Tucuman cost the nation during the year 1877, for running expenses, $24,729.

As you stop again in the open court to admire the fountains and the magnificent tropical plants growing in the open air, you meet three or four of the students. They are graceful young men, with heavy, straight, black hair, swarthy complexions, an indolent, independent air, and remarkably fine manners. Perhaps two of them have a trace of the native Indians in their features. It may be that they have *becas*. A *beca* is a grant from the goverment of twelve dollars per month, free of all obligation, to sixteen of the students of this college. Each college has a certain number of becas allowed it by the government to be bestowed upon pupils recommended by the Rector. As you pass through the hall again to the street, do not fail to notice the fine condor which stalks about, chained to a post, and then remember that you are under the shadow of the Andes.

J. W. Stearns.

MADISON, WIS.

IN THE LIBRARY.—SCHOOL INSPECTION.—I.

[The suggestions in this treatise by D. R. Fearon, Assistant Commissioner of Endowed Schools, are, of course, adapted to the English plan of organization, as the work was written for English Inspectors. Most of the practical suggestions,—which are many and very valuable,—are applicable directly to American schools, and serviceable to teachers as well as superintendents and inspectors. The explanation of a very few terms will make the treatise more readily understood. PUPIL TEACHERS are pupils employed to perform certain duties in the school, so as to serve a sort of apprenticeship to teaching. The Elementary Education act provides that they must be not less than thirteen years of age at the date of their engagement, must be approved by the inspector, and pass the required examination, and not more than four for every certificated teacher must be employed. Their engagement is for five years, at the end of which time they are expected to enter on examination into one of the colleges for training teachers. The plan has not worked very satisfactorily for obvious reasons.—DRAFTS. In England the group of pupils placed under one teacher for its ordinary instruction is called a class. When for any purpose this is divided up the parts are called *drafts;* and when several *classes* are brought together the new group is called a *section.*—GALLERY LESSON. General knowledge lessons, language lessons are fairly equivalent terms in our schools.—LOG BOOK. A record of the school from day to day, kept in the form of notes of occurrences with dates—a sort of school diary.—The treatise will be published in eight numbers.]

1. *Inspection and Examination*: *what they Mean.*—The proper scru-

tiny of an Elementary School consists of two principal parts, viz. *inspection* and *examination*. By "inspection" is meant the process of seeing a school at work in the course of its ordinary routine; noting how it is constructed, warmed, drained, ventilated, furnished, and supplied with apparatus and other materials; how its journals, registers, and other records are kept; what is the course of education, physical and intellectual, which it supplies to its scholars; whether it is conducted on the most approved methods for economizing time and labour; what is the order and discipline; what the relations of the scholars, to their teachers and to one another; how the teachers give their lessons, and how in other respects they are qualified to perform, and do perform their duties. By "examination" is meant the process of testing, by written and oral questioning of the scholars, whether the results of the instruc-given in the school are satisfactory.

2. *Why Both are Necessary.*—Some persons maintain that if a school is thoroughly examined, there is little need for inspection. Others say (or used to say), that if a school is carefully inspected, there is there is little need for examination. Both these conclusions are, in my judgment, erroneous. Even if the duty of an inspector were only to find fault, examination would be by itself an imperfect test of a school. But I think there can be no doubt that his duty is quite as much to suggest *how faults are to be amended*, as to find them out and report them. Managers and teachers ought to look forward to the visit of an inspector, not only with anxiety lest faults should be found, but also with hope, and an expectation that he will suggest means of overcoming difficulties and amending defects. And examination without inspection will never enable an inspector to do this. Moreover, examination of children, even in the hands of the most experienced and patient of inspectors, *is not an infallible test.* Many an inspector's judgment formed on examination has been corrected, illustrated, or confirmed by inspection; and many a teacher, who, if his school had been only examined, would have set his failures down to bad luck, has been convinced by a thorough but kindly inspection, that he has only himself to blame for them, and that it is his own fault if such failures ever occur. And it is an equal, or worse, mistake to depreciate the importance of examination. *No one can be certain of the results of teaching on children, until those results have been tested by examination.* The capacity of children for receiving and retaining knowledge

is so very various; the roads by which knowledge comes home to different children, and to the same children at different times, are so different, that no one can venture to say that any given child has apprehended, until he has proved by examination that he does apprehend. Education, unfortunately, is an art which is subject to so many delusions that teachers whose work is not tested by examination as well as by inspection will be sure to deceive both themselves and the inspector. But the combination of careful and intelligent inspection with judicious and thorough examination obviates the defects which belong to either system separately, and renders the tests whereby an experienced inspector is enabled to judge of the work of a school as sure and perfect as the means of forming any human judgment on such materials can well be rendered.

3. *Why a School should be Inspected before it is Examined.*—Inspection should precede examination:—

First, because if he inspects a school before examining it, an inspector will find when he comes to the examination that he has already obtained much information about the school, which will help him to estimate rightly the value of the answers given and the work done by the children in the examination. He will have seen much that will show him when and where he ought to make allowance, and when and where he may be righteously severe.

Secondly, because the scholars having become used to his voice and presence during the inspection, will be less shy, timid, or excited when they come to their examination, and less likely to do themselves injustice.

Thirdly, because examination causes so much derangement of the ordinary routine of a school, that when it is begun no fair judgment can be formed of what would be the discipline and other conditions of the school if the ordinary routine had not been interrupted. The finer points of the teachers' relations with their scholars, and of the tone of the school, must be missed, under the pressure and excitement of an examination.

4. *Pupil-Teachers should be Examined before the Inspection.*—The examination, however, of the candidates and pupil-teachers employed in the school should have preceded the inspector's visit to the school. For, as I shall show presently, it is a most important part of an inspector's duty to take with him to the school the papers which have been worked by the pupil-teachers at such examination,

and to speak to them, and to the principal teacher, on their merits and defects. Nothing can be more useful to the pupil-teachers and to their instructor than that the inspector should have an opportunity of actually showing them what answers have been made to the questions set in examination. And the fear of having their blunders so brought home to them will produce painstaking in young teachers, who are too often callous to warnings which come in dry and terse terms from Whitehall.

5. *Preparation for Inspection.*—I proceeded, then, to treat of these two parts of an inspector's work, viz., inspection and examination. And, first of all, it may be assumed that he is aware of the importance of his being early at a school, and is therefore an early riser. Let us suppose him coming to a large town school of three departments,—boys, girls, and infants. By means of a circular, which he sends round to every school on his list, his district is aware of his method, and there is no uncertainty, doubt, or anxiety as to how he will proceed. Consequently, when he reaches the school, he finds it working without disorder or derangement in its usual routine, all the teachers and their classes being engaged on the work which the time-table shows they ought to be doing at that particular hour. The time-table itself is, of course, hung in a conspicuous place upon the wall, and it is only necessary that the inspector should go up and look at it in order to be able to understand what is going on at the moment of his arrival. Except that, of course, he interchanges salutations with the principal teacher, no interruption is caused in the work by his arrival. His circular has announced that the work of the school should, when he arrives, be proceeding, and should after his arrival continue to proceed, until he calls for a change, according to the time-table; and that the log-book, registers, and all other records of the school, together with the returns required by the Education Department, should be lying ready on the table or desk; that the order and discipline of the school will be chiefly judged by observation of the working of the school under its own teachers, in its regular routine; and that, therefore, if the managers permit the presence of visitors at the inspection, it is most important that they should request them to be perfectly silent, and to place themselves in such a position as will least interfere with the routine of the school; that he will endeavour to give the children an interval, and to save them from unnecessary fatigue and excitement; but that, as he cannot always under-

take not to detain them beyond their usual dinner-hour, the children should be cautioned to come to school on the day of inspection provided with food.

6. *Inspection of the Infant School.*—If, as I have supposed, the school consists of three departments, the inspector's plan will be to take the infants' department first, because its scholars will be less able than those of the upper departments to bear the strain of expectation. I will suppose, then, that he has made arrangements to do this; and that, on arriving at the school, he proceeds first to the infants' department, where they are expecting him. If the principal teacher is a stranger to him, and, on this account, or from his knowledge of her derived from previous inspections, he has reason to think she is nervous, he will endeavour to remove her nervousness, and that of her pupil-teachers and scholars (for nervousness of a principal teacher is sure to communicate itself to her scholars and her subordinates), by finding something in the school about which he can say a kindly and cheery word. An inspector of any tact can always find something on coming into a school, such as the cleanness of the floor, or the large attendance, on which he can bestow a word of praise, so as to take away the teacher's fear, or overcome the stiffness which is felt at the beginning of an inspection. As a general rule, however, it may be said that if an inspector has a reasonable amount of good nature, only the bad teachers in his district will be nervous. Ignorant, eye-serving, and incompetent teachers will always be nervous, because they fear detection. But teachers who know their business, and are on those good terms with their scholars and their subordinates which can only be established by thoroughness and competency, are not nervous.

I will, for for the sake of illustrating how the work of inspection should proceed, suppose that the infant school is worked by a principal teacher, with the assistance of three pupil-teachers, of whom one is at the end of the fifth, one of the third, and one of the first year of apprenticeship; and that there are three candidates for pupil-teachership. In inspecting this, as in the case of every other school, the inspector will have two main things to which he must look. First, he must look to the *order of the school*, under which term are included the discipline, the drill, the musical and other exercises, and the means taken for economising time, for avoiding confusion in giving lessons, and in changing from one lesson to another. He must also look to the *method of the*

school, under which term are included the system and practice of delivering lessons, the various modes of working the different subjects of instruction in groups or classes, and the means taken to train the pupil-teachers, and to make the scholars learn.

7. *How Order is to be Tested.*—Having, as I have supposed, exchanged a few words with the principal teacher, and seen that his materials, log-book, registers, &c., are all at hand, so as to be available without again interrupting the school, the inspector will proceed to apply himself to the first part of inspection, viz., *order*. If his assistant is with him, he will set him to test the registers, and examine into other matters of technical detail at the table or desk. Meantime, he will place himself in some place, where he can, without unduly attracting the observation of the teachers and their classes, quietly watch what goes on; and thus he will proceed to note the school at work. In less than five minutes, if the teachers are prepared for his mode of procedure, the scholars will have forgotten his presence, and will be at work as cheerily and naturally as possible under their teachers. How long he will find it to be necessary to watch this ordinary life of the school depends on circumstances; but if the time-table shows that a change is at hand within a reasonable period, it is well that he should continue so to watch til the change is completed. *There is no such tell-tale of the discipline, order, tone, and common sense of a school as the change.* Is it made quickly and quietly? Does every one seem to know his business, and do it in a simple but self-reliant manner? Are books and slates distributed or collected and put away without noise and confusion? Do the scholars leave the desks for the floor, or the floor for the desks, and are they grouped in the gallery for collective lessons, or broken up into classes for reading or arithmetic, without any misunderstanding? And through it all, does the principal teacher keep her place and control the school by a look, a gesture, or a quiet word? If so, there cannot be much amiss with the order of that school.

8. *How Method is to be Tested.*—If on looking at the time-table, the inspector sees that a change is not to take place for something like a quarter of an hour, he will leave his post of observation after a few minutes, and proceed to look into the second part of inspection, viz., *method;* taking care to return to his post in time to watch the change. What, then, is his duty in proceeding to test method in the case of the infant school which I have supposed? If the principal teacher is un-

known to him, or a probationer, it will necessary to see her take a class, and hear her give a gallery lesson. And in an infant school, where gallery lessons form so large and important a part of the work, this last will be almost always desirable.

9. *Mistakes in Teaching Infant Classes.*—In inspecting the class teaching of an infant school the inspector will bear in mind what are the errors most frequently committed by unskilled teachers, and will look to see whether the principal teacher herself avoids those errors, and trains her pupil-teachers to avoid them. Such errors are, for example:

(1). *Not Keeping a Class in Good Order.*—When infants are called out in drafts on the floor, as, for instance, for the purpose of a reading lesson, a chalk line should be drawn on the floor, and they should be made to stand carefully and steadily to that line. All fidgeting and ugly little habits, all lounging, slovenly ways of standing and sitting at lessons, should be checked with the most scrupulous care in an infant school, while such habits are yet unsettled, and are therefore more easily eradicated than they will be found to be in the upper schools. The utmost attention should be paid to the mode of holding books, slates, and pencils—to the manner of rising up and sitting down, and to all the postures and movements of the children in class, and when changing from one lesson to another.

(2). *Not Making the Children Speak out.*—This is a common but a most easily cured fault in the infant schools. If the inspector, or his assistant, when he comes to examine the infants in reading, calls them up one by one to a table, as is sometimes done, he will, by such a practice, greatly encourage the fault of not making the children speak out. But if he insists on making the children, who are presented to him for individual examination in reading, read in their classes at a reasonable distance from him, and requires them to follow on, and to find and to keep their place in a reading book, he will soon check this fault. All individual examination should, as far as possible, be done as a part of class examination.

(3). *Moving to the Children and Touching them, instead of taking up a well-chosen Position and Controlling them from that Position by the Voice and Eye.*—This is a most common fault in young teachers. And a good way for the principal teacher to correct it in her pupil-teachers and candidates is to make them, when taking a class, or giving collective lessons, stand behind a small desk. If a small reading desk

is placed in front of any young teacher who has the fault, and she is required not to leave it, she will soon break herself of this bad habit. Every school ought to be furnished with one of these desks, capable of being raised and lowered, to suit the various teachers' height, for every teacher in the school. But, failing such a desk, a chair may serve the purpose, if turned round, so that its back may form a barrier to the young teacher, and give her something to grasp with her hands.

(4). *Allowing the Children to Recite, or Read, Simultaneously, or Individually, in a Monotonous, or as it is sometimes called, a Sing-song Voice.*— Exercise in simultaneous reading is of the greatest importance in an infant school, if properly used; but it is a mode of teaching which is liable to great abuse, and when abused it is worse than useless, and postively injurious. If in the simultaneous part of the reading lesson the children do not imitate the voice and accent of the teacher, but repeat after her in a monotonous tone; or if part of the class is lazy, and catches up the words repeated by the dilligent children in a perfunctory manner, such similtaneous teaching is positively harmful. But I defer the suggestions which I wish to make on the teaching of reading till I come to treat of this subject as a part of the inspection of the upper schools.

All such faults as these the inspector will of course expect the principal teacher to avoid; and, if she is a probationer, he will not issue her certificate until they are amended. When once the training colleges come to see that teachers do not get their certificates if they have these faults, they will pay more attention to the work of their students in the practising schools. By similar tests, graduated in severity, the inspector will test the class teaching of the pupil-teachers and candidates. A fifth year pupil-teacher should have thoroughly, and a fourth year pupil-teacher very nearly, mastered all these rudimentary points in class teaching. And no certificate of fitness to conduct a small rural school should ever be given to a fifth year pupil-teacher who fails in these matters, or who has not got a proper control of children. Of the rest of inspection in class teaching, viz., by pupil-teachers and candidates, I will speak when I come to the upper schools (see § 15).

THE pain of parting is keenest to those who go, but it stays longer with those who are left behind.—*Foote.*

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

THE NERVOUS SYSTEM.

ORIGIN OF SENSATIONS.—OBJECTS OF THE LESSON: To teach that: 1. At various places on the surface of the body there are *end organs*, very sensitive, some to one kind of motion and some to another. 2. Nerves in the form of thread like fibers convey away the motion set set up in the end organs to *nerve centres*. 3. The motions brought to the nerve centres are the means which enable us to form judgments in regard to what we see, feel, hear, taste and smell.

Looking at a lead pencil, its color, size and form are observed. Drawing the pencil through the fingers, its form, size and nature of the surface are noted. Holding the cut end of the pencil to the nose, the odor of red cedar is detected. Biting a chip from the pencil and chewing it, a peculiar taste is recognized. Striking the pencil against the desk, a sound is heard. Five distinct sensations have been produced and many thoughts have resulted from them. How? What structures in the body have been set at work? To see the pencil, light must enter the eye from it. In our experiments with wave-motions on the string we learned that waves traveled along the cord to the wall, and on reaching it produced a jerk before being reflected back to the hand. This jerk can be distinctly felt, if, instead of tying the string to the wall, a pupil holds it in his hand; but, in this case, the wave will not be seen to return over the cord as when it was attached to the wall; and this is because the *wave-motion* has become *hand-motion*, and the hand does not give it back to the cord again as the more elastic wall did. Now light, like sound, and like the motion on the cord, is a series of *waves* travelling away from the pencil, which, on entering the eye, produce thrusts against very sensitive end organs, and is destroyed as light, much as the wave on the cord was destroyed by being *transformed* into motion of the hand. We know the light does not come out of the eye, for the pupil is always a jet black hole, as it could not be if the light returned through it again. The motion set up in the end organs does not stop there, but is conveyed away over nerves through the skull to nerve centres in the brain, where it comes to be understood as having been caused by light reflected from the pencil; and it is very strange indeed how those waves of light, coming from the pencil and striking upon the sen-

sitive end organs, can send a motion over the nerves to the brain which will enable us to say the pencils is cylindrical, black, six inches long, sharpened at one end and carrying an eraser at the other. In passing the pencil between the fingers it slips over and catches intermittently upon their inequalities, thus jarring sensitive end organs just beneath the skin, and the motion thus set up in the end organs runs over nerves to the brain, causing us to think the pencil is round and smooth. While we hold the point of the pencil to the nose minute molecules of matter leave the wood, and, with the air, come in contact with the skin over another set of end organs, out of which, as in the other cases, run motions over nerves to the brain, and as a consequence we recognize the odor of cedar. When the bit of pencil is chewed molecules of matter are expressed from the wood, which, coming in contact with end organs in the tongue, set up motions which run to the brain over the nerves, and still another thought is awakened. In striking the desk with the pencil it is made to vibrate, much as the string did when it was giving out its sound, and this sets the molecules of air vibrating which beat upon a structure in the ears, thus giving rise to motions in another set of end organs from which it spreads along other nerves to the brain. Here we are brought face to face with a wonderful mechanism within our bodies, which enables us to communicate with the world outside of us, and without which we should scarcely be able to learn anything.

ORIGIN AND REGULATION OF ACTION IN AND OF THE BODY.—OBJECTS OF THE LESSON: To teach that: 1. The will may cause nerve centers to set tissues in action. 2. Motions, like light, sound, heat or chemical action, outside the body acting through end bodies may cause nerve centers to set tissues in action. 3. Motions produced by action within the body and transmitted to nerve centers may enable them to cause or regulate the action of tissues. 4. Possibly some nerve centers, like those in the heart, are self-stimulating or automatic. 5. All tissues of the body are put in communication with one another and have their action regulated by the nervous system.

Place a mark upon the black-board and hold a pencil about five feet in front of it, allowing a pupil to walk from the rear of the room toward the mark keeping his eye all the time in line with the pencil and the mark. Move the pencil so that the pupil must stoop at times and others rise on tiptoe in order to keep the eye in line. During this experiment many muscles have been repeatedly brought into concerted action.

We say these movements have been due to an agreement between the pupil and teacher to do a certain thing, which is true, the will of the pupil stimulating the nerve centers to cause and regulate the action of the muscles; but the pupil knew what muscles he would be called upon to bring into action only by the changes in the direction of the light as it came to him from the pencil. In moving as needed, the eye was the first thing concerned, next the brain and then the response from the muscles. The will, acting through nerve centers and guided by the changes in the direction of the light striking the end organs in the eye, was able to cause and regulate the action of this large number of muscles. When we bring the eye into a bright light the pupil at once partly closes. A nerve center, not acted upon by the will, but stimulated by too bright light falling upon the end organs of the eye, has caused the pupil to close. Suppose something comes suddenly before the eyes and frightens us, so that we dodge. In this case we do not will the muscles into action; they are acting during the very time we are becoming frightened; but a nerve center different from either of those considered has been stimulated and guided, by what was seen, to make the same muscles act which, under other conditions, are controlled by the will. We have seen that if we run rapidly the heart beats faster and we breath oftener. The running muscles have been stimulated through the will, while these muscles have their action accelerated by other nerve centers excited by a disturbance originating with the action of the running muscles. If you will kill a frog and carefully remove the heart from the body, laying it upon a damp cloth, it will continue to beat for a long time. In this case there are nerve centers within the heart itself which which cause its beating, but how these centers are stimulated is unknown, and hence they are called automatic. From these consideration we may pass to the general truth that all tissues of the body are placed in communication with one another by *nerve centers*, *nerve fibers* and *end organs*, which together constitute the nervous system, and by them have their activities excited and regulated.

EXAMINATION OF THE BRAIN OF A CALF.—OBJECTS OF THE LESSON: To teach the general appearance of nervous tissue, the sub-division of the brain into ganglia having different functions, and the connection of the body with the brain by means of nerves.

Request your butcher to save you the head of a calf. Go to the shop yourself, and ask him first to saw the upper and lower jaws squarly off

just in front of the eyes. Then have him place the saw on the top of the skull midway between the eyes and carefully saw just through the skull from front to back, continuing the cut backward into the hole through which the spinal cord emerges. Now turn the head bottom up and saw through the base of the skull just opposite the other incision, sawing backward into the opening for the spinal cord. At this stage the skull will be nearly, if not quite, in two halves, and a little sawing in front will complete the task; but the two halves will still be held together by the membranes surrounding the brain, and should not be separated until you are ready to show the brain. To remove the brain, take the large blade of a pocket knife and carefully pry the two halves of the skull apart from above, at the same time loosening the firm membrane lining the skull from one side until this half falls well over on its side; then, with a pair of scissors or the point of the knife, cut the membrane from front to back, if it has not already been done in sawing; one half of the skull will now come away bearing the dura mater with it, and the brain will lie in the other half, and can be easily turned out upon a plate. On examining one half of the skull there will be seen the firm, strong dura mater, which acts at once as a periosteum to the inside of the skull and a protecting membrane for the delicate nerve tissue which it surrounds. Entering through holes in the base of the skull may be seen several white, cord-like bodies; these are nerves. Placing the brain now top up, there may be seen the delicate pia mater bearing a close network of blood-vessels whose function is to supply the brain with blood. The large brain mass in front, divided into right and left halves and having its surface covered with ridges and grooves, is the cerebrum, the largest ganglion in the body, and the one which is concerned with consciousness, our intellectual processes and will power. The cerebrum in the calf does not extend as far backward as in man, and hence, lying behind and partly under it, there may be seen the little brain or cerebellum; this contains centers which enable us to stand and perform all those complex movements requiring the joint action of many muscles. Still behind the cerebellum and below it may be seen the medulla oblongata, a body composed partly of nerve fibers which connect the various parts of the body with the brain and various centers including those concerned in chewing, swallowing, breathing, the beating of the heart, the action of the salivary glands, and others. Laying the brain base up, there may be seen at the very front portion of the cere-

brum, below, fragments of the two ganglia of smell, which will almost always be torn in removing the brain unless great care is taken. The medulla oblongata may now be better seen, and some of the cranial nerves. Next turn the brain back, top up, and gently press the two halves of the cerebrum apart until a white surface at the bottom of the fissure is seen. Cut carefully through these nerves connecting the two halves, and a cavity within the brain is reached in which three pairs of ganglia are to be seen. Gently roll the two halves of the cerebrum out and you will see, back of it next to the cerebellum, four oval masses standing close together in two pairs, the front being much larger; these are the four twin bodies and the front pair has to do with seeing. In front of the four twin bodies, and on a little higher level are two larger, less steep swells, which were first supposed to be the ganglia of sight and are named optic thalami. Their function is unknown, farther than that when they are removed there is a general weaknes of the muscular system. Lying outside of the last pair of ganglia, and extending farther forward, are two still larger ones, which, when cut into, appear streaked with white and grey lines, and hence are named the striated ganglia. Their function is unknown. Slicing the top of the hemispheres from the cerebrum, the grey layer composed of nerve cells will be seen dipping down into the brain, where it shows in sharp contrast with the white nerve fibers below. If the cerebellum is sliced downward from front to back through its center the diverging white nerve fibers, as they spread outward to enter the grey nerve cells on the outside, may be beautifully seen.

I hope teachers who have not dissected a brain will not infer that the task is anything like as difficult as that of understanding written descriptions of the brain. As a matter of fact the most difficult task about showing the general appearance of the nervous tissue and the main large ganglia is removing the brain from the skull.

DISTRIBUTION OF GANGLIA. Having seen some of the great ganglia, and the nerves leading to and from them, their general distribution through the body may be briefly reviewed. A great nation, like the United States, living upon the earth surrounded by other nations with which it must have communication, is obliged to have two distinct kinds of governmental work done, and the appliances for doing them; there is that work pertaining wholly to what is transpiring within the nation as a body, and that pertaining to the regulation of our movements with

reference to nations and objects outside; and to do this work there are intelligent men, provided with various and suitable means of communication connecting them with all parts of the U. S., and enabling them to know what is going on without. Now, much such needs as these exist with reference to the management of our own bodies, and they are beautifully and perfectly met by the nervous system, which, because of its double functions, has its nerve centers, nerve fibers and end organs divided into two classes, one, whose main business is to maintain and regulate those unconscious processes continually going on within our body which constitute its life, the other, whose business is to guide the movements of the body with reference to things outside of it, to protect it from harm and to secure it its food. The nerve centers brought together at central places represent the intelligent governmental officials, while the nerve fibers and the end organs are the appliances they have with which to communicate with one another, the various parts of the body, and with the outside world. The ganglia of the first division, or sympathetic nervous system, are mainly grouped in a double chain within the body cavity in contact with the backbone. Other nerve centers are clustered near important organs like the stomach; while still others, like those within the heart and in the muscles of the blood-vessels, are located upon or in the organs they control. By means of the nerve fibers and end organs these centers are all connected with one another, with the organs they control, and with the other division of the nervous system. The second division of the nervous system, called cerebro-spinal, the main ganglia of which we have seen, has its nerve centers located within the backbone and its enlargement, the skull. Out from the spinal cord, whose center is a long ganglion while its outside is a nerve, extend bundles of nerve fibers reaching to distant parts of the body, and through them disturbances from without, causing sensations are conveyed, and the action of voluntary muscles is induced and controlled.

HITTING THE "FUNNY" OR "CRARZY BONE."—OBJECTS OF THE LESSON: To teach that: 1 A nerve extending to the hand lies in the in ner notch of the elbow. 2. The nerve, but not the nerve fibers, branches after leaving that point. 3. Disturbances produced in sensory nerves are interpreted by the mind as originating at their end, no matter where the nerve may be disturbed.

Bend the left arm nearly at a right angle. Press the finger hard upon the point of the elbow and while doing so allow it to slip toward you

into the notch. A sharp, tingling sensation is felt below the elbow, and mainly in the little and ring fingers. A bundle of nerve fibers has been pressed upon, out from which the fibers diverge and end at various points. The individual fibers of nerves, however, do not branch between the nerve cell they enter and the end organs to which they are attached, and it is owing to this fact that we are able to locate so definitely where we are touched. If the nerve fiber connecting a peculiar point on the thumb, for example, and a nerve fiber connecting some point on the little finger joined and become one before entering the interpreting nerve center, there would be no means of knowing, through feeling, when the little finger was burned, but that it was the thumb. So if the nerve fibers leading to the muscles branched it would be impossible to make one muscle contract and at the same time hold another still. The main sensation produced by the experiment was felt, not where the disturbance occurred, but lower down; this is because we have learned through experience to refer the disturbance coming over a particular nerve to its end, where it is most exposed and almost always disturbed, if disturbed at all. It is owing to this fact that people who have had a hand or limb amputated, for a long time feel the hand or foot when the nerves which used to end there are disturbed, but they do, in time, unlearn the habit of referring the sensation to the wrong place.

MEASURING THE TIME REQUIRED TO FEEL AND ACT.—OBJECTS OF THE LESSON: To teach that: 1. A disturbance is not felt nor a muscle made to contract instantaneously, but the nervous impulse travels in man at the rate of about 108 ft. per sec. 2. The nervous impulse traveling over the nerve covers—in the frog—about .72 of an inch of the nerve and may be, in so far as it travels and has length, compared to the wave running over the cord.

Arrange the class in a circle, each pupil placing his hand on the shoulder of the one in front. At a signal let No. 1 press gently upon the shoulder of No. 2, and let No. 2, as soon as he feels the pressure, also press upon No. 3, and so on. Let the pressure be transmitted around the class several times, until what is required is understood. Now let No. 1 start by a watch or the pendulum and let the impulse go five times around the class, No. 1 calling out when the thrust reaches him the fifth time. Suppose there are 20 in the class. There have been 5×20 or 100 sensations and voluntary acts, and these have required, say 14 seconds; the time required for one will be $14 \div 100$ or 1-7th,

nearly. In my class the time was 6-40ths of a sec. This experiment, I believe, was first tried by Dr. Oliver Wendall Holmes, and the average time required has been found to be 1-7th of a sec. This slow rate of action means, of course, that the finger must burn an appreciable part of a second before we can remove it from a hot surface.

F. H. King.

RIVER FALLS, WIS.

READING CIRCLE WORK—EIGHTH MONTH.

ELEMENTARY COURSE.

PAGE. Read from page 362 to the end of the book. HISTORY. Read pages 255 to 310. PHYSIOLOGY. Read chapters 17, 18 and 19.

ADVANCED COURSE.

QUICK. Finish the book to the appendix. The remark on page 261, "teaching is a very narrowing occupation," should suggest profitable reflections: Why? How does the tendency affect teaching, from year to year? How may it be counteracted? The discussion on drudgery and interest in work is very important, especially the remark that in school "boys do not learn to work *hard*, but in a dull, stupid way, with most of their faculties lying dormant"—a fact of the very highest significance. Can teachers find a remedy for it? Reflect also on this: "Our school-teaching is often little better than an attempt to get sea-anemonies to flourish on dry land." The first of these two essays is indeed full of practical suggestions.

FITCH. Read chapters XII. and XIII. Note the clear distinction between studies which are pursued for information and culture mainly, like geography and history, and those which aim mainly at discipline, like arithmetic, and the differences of method resulting from this—a distinction fully brought out by contrasting these two chapters with the two next preceding them. Common sense thoroughly approves the effort made in the first lecture to limit local geography to the purpose of forming elementary concepts, and to make the order and proportion of the things taught in exact ratio to their real significance.

SULLY. Read chapters XVI., XVII and XVIII.

POLITICS. Read to the appendix. The reasonableness of the rules for deliberative assemblies may properly be discussed, and afford a val-

uable exercise; the practical use of them in managing debating societies or other organizations of young people is to be persistently urged. This is a sort of training which every American boy ought to receive in his youth, and which, with a little help and encouragement, he will find great pleasure in giving himself.

HISTORY. Finish the book. Fix these dates in mind, and associate them with the proper events, which in the case of some of them are several instead of one: 1815; 1830; 1848; 1851, 1870. The "Historical Recreations" at the close of the book afford an interesting means of review and self-examination.

LITERATURE. In BROOKE, finish the book. It stops short of the Victorian age, some glimpses of which, and of American literature, will be obtained from Swinton's Studies. In SWINTON, read from page 455 to 544.

OFFICIAL DEPARTMENT.

TEACHERS' EXAMINATION FOR STATE CERTIFICATES, 1887.

I.

BOARD OF EXAMINERS.

The Board will consist of Pres. Geo. S. Albee, Oshkosh; Prof. J. W. Stearns, Madison; and Prof. J. Q. Emery, Ft. Atkinson.

II.

TIME AND PLACE OF EXAMINATION.

The Board will meet at Madison, June 28, 1887, at 9 o'clock, A. M., and will continue in session four days.

The examination will be held in the senate chamber.

On Saturday, July 2, the Board will determine the standing of applicants and make report to the State Superintendent.

III.

CHARACTER OF EXAMINATION.

For the limited (five years') State certificate, examination will be had in the branches required for a first grade county certificate, with the addition of English Literature and Mental Philosophy.

For the unlimited (life) State certificate, examination will be had in the branches required for limited State certificates, with the addition of Botany, Zoology, Geology, Political Economy and General History.

Seventy per cent. is the minimum average standard for a *limited* certificate; and seventy-five for an *unlimited.*

Seventy per cent. is the minimum standard for each of the first grade branches, and sixty per cent. the minimum in English Literature, Mental Philosophy, Botany, Geology, Zoology, Political Econony and General History.

The *limited* State certificate will require three terms of four months each of successful teaching. The unlimited, seven terms of four months each.

Satisfactory testimonials of moral character will be required.

Applicants for *limited certificates* will be allowed trials at three consecutive sessions of the Board of Examiners in which to complete the examination. Applicants holding the limited certificate, or its equivalent, will be allowed trials at any two consecutive sessions of the Board of Examiners during the validity of the certificate held, in which to complete the examination for a *life certificate.*

During the limits herein fixed re-examination will not be required upon branches in which a satisfactory standing has been attained.

IV.

SUGGESTIONS TO APPLICANTS.

Examination in branches additional to those required for a limited certificate will be taken up on the third day—Thursday, June 30.

The evenings of the first three days will be devoted to oral examinations in the following branches: Reading, Mental Arithmetic, Grammar, U. S. History, Physiology, Geography, Mental Philosophy, Physics.

In examination upon any branch drawing may, and in Physiology, Physics, Botany and Zoology, will be required to the extent of correctly and creditably representing the objects described.

As a guide to such as may desire to review either of the following branches before examination, or are making original preparation in these studies, the following suggestions are made: Physics—Gage, or an equivalent; Zoology—Harbison, or an equivalent; General History—Fyfe's Greece, Creighton's Rome, and Myer's Mediæval and Mod-

ern History; English Literature—the selections from Shakespeare, Addison, Scott, Byron, Bryant, Macaulay, Emerson, and Longfellow contained in "Swinton's Classic English Reader," and for historic and literary criticism, the Literary Primer by Stopford Brooke (the former published by I. B. T. & Co., and the latter by D. Appleton & Co.)

Stationery needed will be furnished by the Board.

The attention of all persons purposing to become principals of free high schools in Wisconsin, and who are required by law to pass special examinations to qualify them for teaching in such high schools, is especially called to the time and place of holding this examination.

Sec. 494, R. S., ch. 325, Laws 1883, Sec. 1.

J. B. THAYER, *State Superintendent.*

MADISON, April, 20, 1887.

QUESTIONS AND ANSWERS.

Q. Can a majority of a district board hire a teacher after the district has held a special meeting and voted against such teacher being employed?

A. The law gives districts no authority to vote upon the question of who shall or shall not be employed to teach the school. Such votes are advisory only, and have no binding force. The hiring of teachers is a matter left entirely with the district board.

Q. Our district held a special meeting and voted to have the district divided; the supervisors then met and divided the district; but the district was not generally notified of the special meeting. Is the division legal?

A. The legality of the division is not affected by the special meeting or the vote taken upon the division, in any way. Districts are not authorized to vote upon that matter. The legality of the division depends upon the proceedings of the supervisors. If they acted in accordance with the directions of the statutes their act is legal; otherwise it is not legal.

Q. The board extended the spring vacation to that extent that the nine months contracted for cannot be completed before June 25, the time when the payment of the full salary is fixed by the contract. Can the teacher collect the full salary at that time and refuse to teach beyond that date?

A. If the contract calls for nine months of service, that length of time can be demanded or a proportional amount of the salary may be deducted. If the teacher has been put to extra expense of time or money by the interruption, or unnecessary delay of the board, that, possibly, may become an equitable charge against the board. Whether that can be maintained as a *legal* claim, courts in this State have not decided.

Q. Does the law enacted at the last session of the legislature extend the time first and second grade certificates now held remain in force?

A. The law mentioned will affect only certificates issued after the passage and publication of the law. This law makes second grade certificates valid for two years, and first grade certificates valid for four years. County superintendents may limit first grade certificates to one year at their issue, and remove the limitation when experience shall warrant.

Q. When a town votes to abolish the township system of school government, what steps are to be taken to inaugurate the system of independent school districts?

A. A law of the late legislature makes provision for this exigency. The town board of directors are to continue the management of the schools under the township system for the balance of the school year, that is until June 30. The town board of supervisors are to meet on or before June 1, divide the town into convenient school districts, appoint a day for the first meeting of each, etc. The districts thus formed are to meet on the day appointed, and organize by electing the usual district officers. At the annual meeting held on the day fixed by law, the district will vote necessary taxes and transact all other business which school districts are authorized by law to transact. As the date of forming the districts is so near the date fixed for holding annual meetings, the latter date will be the most suitable date for the first meeting.

Q. What change, if any, was made in the law relating to holding annual meetings by school districts, at the recent session of the legislature.

A. No change in that law was made, except a provision was added that when the first Monday in July is a legal holiday, the annual meeting shall be held on the next day.

EDITORIAL.

SUMMER SCHOOLS have proved their usefulness. Some of them have now been in successful existence for several years, and every summer witnesses an increase in their number. The first in this country was the school for science opened on Penekese Island in 1873, by Prof. Louis Agassiz. Its success was a revelation. A great teacher, with enthusiasm and new and large ideas as to science teaching, gathered about him speedily a body of devoted and enthusiastic pupils, who have done much to spread the principles in which their master was so profoundly interested. Circumstances made the life of the school a short one, but its results were large. It sent abroad a new spirit in the land, and set an example of what could be done which was not to remain without results. Five years later the Martha's Vineyard Summer Institute was established, which has grown steadily from year to year, has erected permanent buildings for its accommodation, has expanded and improved its courses of study, and enrolled some fifteen hundred pupils. The announcements of nine or ten schools for the present summer have fallen under our notice. They are schools of science, of language, of philosophy and of pedagogy. One of them claims to have reached last year an enrollment of 219 students, from 26 States. Manifestly there is a demand for the kind of help and opportunities which such institutions afford. Those who attend them are mature persons, engaged in the practical pursuits of life, who expect to get from them an impulse, suggestions which they can apply in their after study and work, and contact with able teachers and advanced methods, together with opportunity to frequent and use better laboratories and more extensive and valuable libraries than they have constantly within reach. These results are clearly attainable in the brief summer session. They are the germs of future growth, so that the three or four weeks of summer school make the rest of the year more fruitful. As to the objection that teachers need the the vacation, it seems to us founded upon a misconception. They need rest, certainly, but rest is in change not in vacuity. At these schools they are relieved from the burden of management and the nervous stress of teaching. They may enter now what Milton calls "the still air of delightful studies:" they may have social contact and pleasures: they may feel free to follow out natural interests, instead of being held to the rigid necessities of the class teacher. For vacuity—if it be desirable to a healthy person—a few days should suffice: for out of door life and exercise opportunities are not wanting at the summer school, and moreover time remains of the summer vacation for so much of this—if vigorous as it ought to be,—as most will need or desire. The program of the Wisconsin Summer School for Teachers will be found elsewhere. Responses already received to the preliminary announcements show that there are many progressive teachers in the State who have decided to avail themselves of its advantages. In making plans for the summer, teachers will do well to ask themselves, "Can I do better with my time than to attend this school?"

ELSEWHERE in this number will be found some samples of "English as She is Taught." Of course, the first use of them is to enjoy heartily the laugh they will provoke; after that has passed, some serious reflections will arise. Only foolish persons will jump to the conclusion that these are "sample bricks" by which to judge of the whole edifice of American public education. They are rather samples of the difficulties which beset teaching, and the effectiveness of it is shown by the fact that like errors are on the whole so rare among our people. Every neighborhood can yield some, but not often from persons who have received a course of elementary school training. Three classes of errors deserve especial attention. First are those which arise from false inferences and analogies. The definitions of assiduity, auriferous, franchise and eucharist are illustrations of this class. The mind works properly but upon the wrong data. A wider range of knowledge, such as will come with advancing years, will cure such errors, and they are therefore not of much importance. A larger number come from a failure to discriminate sounds nicely. Theological for geological, caterpillar for capital letter, alias for Elias, ammonia for ambrosia belong to this class. The correct use of words implies constant and delicate discrimination of differences, that slight shades of variation may be detected, so as to avoid not only the mispronunciation but the misplacing of them. Training in the use of the ear is essential to this, that a habit of attending critically, so as to catch words just as they are, may be cultivated in place of the loose way of striking out at them which is natural to many young persons. The cultivation of this critical habit is certainly an important part of elementary school work. In cultivated families the father and the mother are careful to bring to the notice of the child errors of this sort, that he may correct himself: and teachers must labor to the same end. Careful discrimination is a habit of slow growth, and there are few — very few — of us who do not frequently have to reproach ourselves for failures in it. It is fundamental in the other class of errors, which are now commonly denoted as errors of confusion. Answers are made without thought, in complete disregard of common sense, as in most of the mathematical definitions. Such answers are extremely vexations — and extremely common. They are the slips of heedlessness, — shooting without taking aim. They do not indicate ignorance but carelessness and callowness. Others of this class are, it is to be feared, the direct product of unwise teaching. They indicate that the brain is in a complete muddle, a lumber room of unassorted facts, and broken fragments of facts huddled together in inextricable confusion. The answers in history and physiology are the best samples of this class. The power to organize knowledge, bringing and keeping together those things which belong together, because the significance and relations of things are clearly seen — this valuable power has not been cultivated. Skillful teachers are often surprised by such results, and unskillful teachers are not only because they do not recognize the phenomena nor understand their significance. Now, when we have said these things, let us add in candor that they are necessarily incident to growth. If the children were perfect in such matters they would not need to be

in school. They are learners, and children — like men and more than men — "may rise on stepping stones of their dead selves to higher things." The real value of such a collection of blunders, besides the amusement it affords, is to enable us to see more clearly the kind of work which we must do. We shall not be able to prevent the blunders altogether — we may be able to anticipate them and to use them to the best account.

USUALLY it is well to listen to opposite opinions, for they may supplement each other, and if not both true absolutely, may both contain absolute truth. The *Century* magazine says: "Every conscientious teacher can tell how he is hampered by his over-ruling school-board or constituency. His individuality is stamped out, his freshness of method and organization is distrusted." That is one side of the case. The Boston *Advertiser*, on the other hand, urges the need of more thorough supervision. "The advantage of having a trained man constantly engaged in studying the needs of the schools, in applying better methods, and in aiding and encouraging teachers, is so manifest, and the schools of a town or city employing a superintendent have so steadily improved in quality, that one place after another has adopted the system." This is the other side of the case. On the one hand the teacher needs liberty, a reasonable self-assertion, for his value depends largely upon his working in his own way: on the other, system is indispensable, and a supervisor helps the teachers and improves the character of the work. But there are two kinds of supervision: that of school-boards is often arbitrary and ignorant, a supervision which hinders rather than helps: that of a trained man is careful to preserve proper liberty to the teachers, knows where and how to direct, and avoids useless interference. The great change which is going forward on this matter is the substitution of *expert* supervision for *ignorant* supervision. In our larger cities the business has for the most part passed into the hands of men of experience and practical wisdom. In many of the smaller cities the superintendent often has no qualifications for his place, and does his best service by letting the schools alone for the most part. Indeed, outside the large cities we have yet to learn how serious and difficult a matter wise school supervision is — and how important it is. One who does not understand the theory of teaching, who does not know clearly the purposes of a course of study and of each of its parts, who does not know how to help and advise teachers, is not fit for the serious responsibilities of a school superintendent. The evils of no supervision it is unnecessary to dwell upon at the present time; they are fairly well understood: but that ignorant supervision is little better than no supervision, and often more mischievous; and that supervision ought to be the work of educational experts — for the sake of the teachers, for the sake of the schools and all that depends on the schools, — this needs to be insisted upon more and more.

THE EDUCATIONAL LEGISLATION OF THE SESSION.

The laws relating to education passed by the last Legislature of this State are

not so numerous as those enacted two years ago. Some of them, however, are of very great importance. The failure of the vigorous efforts to repeal the mill school tax makes it certain that this important measure will be given a fair trial, and we have no doubt that its beneficial effects, in uplifting the schools and helping the poorer districts, will now become so apparent there will be little disposition to disturb it hereafter. The revision of the law regarding teachers' certificates in its main features meet with general approval. There now exists in the law a sufficient stimulus to rouse a large body of teachers to securing second and first grade certificates, and it is hoped that the results will soon be apparent in the reports of examining officers. The great body of our schools ought not to be taught, as at present they are, by third grade teachers. The first move towards a better condition is found in the new law. This makes a second grade certificate good for two years and a first grade for four. Inasmuch as the life of certificates of higher grades is extended it becomes important that examining officers should be careful in issuing them, that the advance in attainments of those holding them may be such as fully to warrant the greater duration. They have increased value, and the increased demand for them must not be allowed to lower the standards; these should rather be strengthened. This we have said is a first move towards a better condition of things as regards teaching; at no distant day we hope to see the third grade certificate made by legislation what it was originally intended to be—a mere temporary license, issued only occasionally and to meet special conditions. No one ought to be allowed to teach year after year on a third grade certificate. This is a wrong to the pupils, and a wrong to the more capable and intelligent teachers, who by the present system, are forced to compete in prices with a large body of imperfectly prepared candidates. Another provision of the law needs to be thoroughly understood. The county superintendent is allowed—not ordered, for the matter is left entirely at his option—is allowed, if he chooses to do so, to ask the superintendent of a neighboring county to forward to him the examination papers of a candidate holding a certificate in that county, and to base his judgment of the candidate upon these, instead of re-examining him; but, in case of approval, he simply makes the particular certificate from a neighboring county, good in his own until it expires by limitation. The life of it may not be extended in this way. Further, the ambiguity of the former law regarding moral qualifications of candidates is removed. A county superintendent is now authorized to withhold a certificate for known immorality. Another measure removes uncertainties regarding holidays, in accordance with the rulings of the department of public instruction. A holiday may not be offset against some other day, by keeping school on the holiday and omitting on the other. Certain definite days are holidays; on these no school is to be kept, although they are counted in making up the month; if the school is kept on these days no credit can be given for it. Provision is now made, also, that when the first Monday in July falls on a legal holiday, the annual school meeting shall be held on the day following. A very important change is made in the law regarding the reports of school clerks.

Such officers, in reporting to the town clerks, are now required to give the names of all children in the school district, as well as the names of those with whom they live. The law creating township school libraries makes such provisions as ought to result in furnishing everyc hild in the State with suitable reading matter. By this law one twentieth of all school money, whether received from the State or county, is set apart for the purchase of library books. These books are to be in the custody of the town clerk, but circulated among the school districts. They are to be purchased by the town boards, from lists prepared by the State Superintendent of Public Instruction. We shall have occasion at another time to comment more fully on this important law. The laws relating to the township organization, authorized though not yet enjoined in this State, have been revised, and their provisions brought into harmony with the corresponding ones of the district system. As we noticed before in the JOURNAL, two thousand dollars were appropriated to meet the expenses of the Wisconsin exhibit at the National Educational Association this summer. Besides these measures, provision was made for the completion of the new buildings at the State University and furnishing them with suitable apparatus. The appropriation, one hundred and ninety-five thousand dollars, is believed to be sufficient for the purpose, and will place the University of Wisconsin, in point of buildings and apparatus, among the foremost in this country. The State has been liberal towards it, recognizing the important services it is rendering in many directions in building up the interests of the State, and the people have just cause for pride in the growth and strength of this institution. A special appropriation for the Washburn Observatory was eminently wise. By granting three thousand dollars annually, the legislature has now made it possible for this gift of one of our most public spirited citizens and governors to be efficiently directed to the accomplishment of the ends for which it was founded.

OUR DRAWER.

THE SCHOOL GROUNDS.

A correspondent writes: "I hope you will spur up the teachers this spring on the matter of improving and beautifying school grounds. You know I am an enthusiast on this subject, and also a firm believer in its strong influence for good."

It is much easier to do valuable work of this kind than teachers suppose. Some pupils will be found to take a decided interest in the work, and only need suggestions and directions in order to produce very excellent results. A little thought and planning is necessary, and if the plans are talked over with the pupils the interest will be quickened and suggestions as to what can be done will come in thick and fast. Shrubs and plants will be forth-coming from one source and seeds from another. Evergreens and shade trees can be obtained from the

woods. Rustic stands for flowers can be made, climbers reared over the fence or against the building, walks prepared—all by willing hands. The result of such work will be seen in the love of the pupils for their school, and in due time in the yards of their homes. Few things are so easily cultivated as a taste for gardening, and few things do more to improve a village and make its homes attractive and happy.

Will not our correspondent and others interested in this subject, furnish us notes and suggestions out of their own experience in this matter?

READING CIRCLE NOTES.

* * "I am not proud of the showing this year, but next year we shall do better. Plans are nearly completed for vigorous work. This year the work was not pushed, as a majority of the teachers had not finished the elementary course, begun the year previous." The case is not a singular one. In every new movement a rush is made at first if there is vigor in the movers, and then follows a reaction. Some are disappointed and others grow inert. But after a time the movement begins to gain. Those who are serious and persevering take hold of it. The good work they do becomes manifest and others are inspired by it. So it will be with the Reading Circles."

"Our Reading Circle work has lagged this year. The change of superintendents had much to do with it, but now that I have learned my field I recognize the value of the work, and shall hope to make it prosper another year."

"I have pursued the course of reading for the first year by myself, as there seemed to be no possibility of forming a circle here. It has done me much good. It has made me more interested in my work, and so better able to interest my pupils."

"Our circle has diminished somewhat during the winter, but the meetings are very profitable. I am sure that it has done me much good."

"Cannot the Reading Circles be made more interesting by having at least one paper during each session upon some book which has interested a member of the circle? The idea is suggested by the paper on "Anna Karenina" published in the March JOURNAL, and I mean to try to have it adopted in our circle. It will promote the reading of valuable books by many members."

"What book shall I read to learn something of the history of Ireland, so that I may better understand what is going on there now?" "Justin H. McCarthy's Outline of Irish History." It is published in Lovell's Library, No. 115, and may be had for ten cents.

ENGLISH AS SHE IS TAUGHT.

Mark Twain's article on "English as She is Taught," in the *Century Magazine* for April is sure of a wide circle of readers. It is made up of extracts from a book prepared by two school teachers who treasured up the errors of the

school-room which came under their notice, and put them together for the amusement of the public. All the examples, we are assured, are genuine, published just as they occurred, and they are quaint and entertaining enough. To the saying that nothing is so serious as fun, we may now oppose another—nothing is so funny as some serious things. Here are some samples—first of definitions:

Aborigines, a system of mountains.
Alias, a good man in the Bible.
Amenable, anything that is mean.
Assiduity, state of being an acid.
Auriferous, pertaining to an orifice.
Ammonia, the food of the gods.
Capillary, a little caterpillar.
Emolument, a headstone to a grave.
Equestrian, one who asks questions.
Eucharist, one who plays euchre.
Franchise, anything belonging to the French.
Idolater, a very idol person.
Ipecac, a man who likes a good dinner.
Irrigate, to make fun of.
Mendacious, what can be mended.
Mercenary, one who feels for another.
Parasite, a kind of umbrella.
Parasite, the murder of an infant.
Publican, a man who does his prayers in public.
Republican, a sinner mentioned in the Bible.
Plagiarist, a writer of plays.
Demagogue, a vessel containing beer and other liquids.

Here is one which—well, now, how often we do slam right into the truth without ever suspecting it:

The men employed by the gas company go around and speculate the meter.

And here—with "zoological" and "geological" in his mind, but not ready to his tongue—small scholar has innocently gone and let out a couple of secrets which ought never to have been divulged in any circumstances:

There are a good many donkeys in theological gardens.

Some of the best fossils are found in theological cabinets.

The chapter on "Mathematics" is full of fruit. From it I take a few samples—mainly in an unripe state:

A straight line is any distance between two places.

Parallel lines are lines that can never meet until they run together.

A circle is a round straight line with a whole in the middle.

Things which are equal to each other are equal to anything else.

To find the number of square feet in a room you multiply the room by the number of the feet. The product is the result.

Right you are. In the matter of geography this little book is unspeakably rich. The questions do not appear to have applied the microscope to the subject, but they proved plenty difficulty enough. These pupils did not hunt with a microscope, they hunted with a shot gun; this is shown by the crippled condition of the game they brought in:

America is divided into the Passiffic slope and the Mississippi valey.

North America is separated by Spain.

America consists from north to south about five hundred miles.

The United States is quite a small country compared with some other countrys, but is about as industrious.

The capital of the United States is Long Island.

The five seaports of the U. S. are Newfunlan and Sanfrancisco.

The principal products of the U. S. is earthquakes and volcanoes.

The Alaginnies are mountains in Philadelphia.

The Rocky Mountains are on the western side of Philadelphia.

Cape Hateras is a vast body of water surrounded by land and flowing into the Gulf of Mexico.

We come now to historical matters, historical remains, one might say. As one turns the pages, he is impressed with the depth to which one date has been driven into the American child's head — 1492. The date is there, and it is there to stay. And it is at home, always deliverable at a moment's notice. But the Fact that belongs with it? That is quite another matter. Only the date itself is familiar and sure its vast Fact has failed of lodgment:

George Washington was born in 1492.

Washington wrote the Declaration of Independence in 1492.

St. Bartholemew was massacred in 1492.

The Brittains were the Saxons who entered England in 1492 under Julius Cæsar.

The earth is 1492 miles in circumference.

To proceed with "History:"

Christopher Columbus was called the Father of his Country.

Queen Isabella of Spain sold her watch and chain and other millinery so that Columbus could discover America.

The Indian wars were very desecrating to the country.

The Puritans found an insane asylum in the wilds of America.

The Stamp Act was to make everybody stamp all materials so they should be null and void.

John Brown was a very good insane man who tried to get fugitive slaves into Virginia. He captured all the inhabitants, but was finally conquered and condemned to his death. The Confederasy was formed by the fugitive slaves.

Alfred the Great reigned 872 years. He was distinguished for letting some buckwheat cakes burn, and the lady scolded him.

Henry Eight was famous for being a widower having lost several wives.

Lady Jane Gray studied Greek and Latin and was beheaded after a few days.

The middle Ages come in between antiquity and posterity.

Luther introduced Christianity in England a good many thousand years ago. His birthday was November, 1883. He was once a Pope. He lived at the time of the Rebellion of Worms.

Julius Cæsar is noted for his famous telegram dispatch, I came I saw I conquered.

Julius Cæsar was really a very great man. He was a very great soldier and wrote a book for beginners in Latin.

Cleopatra was caused by the death of an asp which she dissolved in a wine glass.

When the public school pupil wrestles with the political features of the Great Republic, they throw him sometimes:

The three departments of the government is the President rules the world, the governor rules the State, the mayor rules the city.

The first conscientious Congress met in Philadelphia.

The Constitution of the United States was established to ensure domestic hostility.

Truth crushed to earth will rise again. As follows:

The Constitution of the United States is that part of the book at the end which nobody reads.

And here she rises once more and untimely. There should be a limit to public school instruction; it cannot be wise or well to let the young find out everything:

Congress is divided into civilized, half civilized and savage.

The chapter on "Physiology" contains much that ought not to be lost to science:

Physillogigy is to study about your bones stummick and vertebry.

Occupations which are injurious to health are carbolic acid gas which is impure blood.

We have an upper and a lower skin. The lower skin moves all the time and the upper skin moves when we do.

The body is mostly composed of water and about one half is avaricious tissue.

The stomach is a small pear-shaped bone situated in the body.

The gastric juice keeps the bones from cracking.

The Chyle flows up the middle of the backbone and reaches the heart where it meets the oxygen and is purified.

The salivary glands are used to salivate the body.

In the stomach starch is changed to cane sugar and cane sugar to sugar cane.

MATHEMATICAL SECTION.

THE GRUBE METHOD.

"Will you please state briefly what is meant by 'The Grube System'?"

1. By the Grube method of primary number lessons, each number from *one*

to *ten* is taught successively, in all its relations to all the numbers below it in the scale, before any instruction is given in any higher numbers. Thus the number six is compared with one, two, three, four, and five, by means of all four fundamental operations, before any work in any of them is given involving a number larger than six.

The successive numbers from 10 to 100 are similarly taught with reference to all the numbers *under 10.*

2. For this purpose a regular system of represnting the numbers by a diagram is followed, in which the whole number of dots or lines representes the larger number (to be compared) and the number with which the larger one is compared. Thus to teach the relation of number six to the number two, we have this diagram, : : :, which the pupil is expected to *read* and *express* in these four ways; $2 + 2 + 2 = 6$; + to be read "and" at first;

$3 \times 2 = 6$; three two's are six, (or, later three times two are six);

$6 - 2 - 2 = 2$; — to be read "less" at first;

$6 \div 2 = 3$; from 6 two can be taken three times, or two is contained in six three times.

To the four operations indicated above we give different names, represent them by different symbols, teach *all* of one before *anything* of the next, and then wonder at the stupidity of the grammar school lad who is surprised at being told that "multiplication is short addition." If those four statements be divested of their mathematical garb, and clothed in plain English, they appear as follows: Two and two and two are six; three two's are six; if from six, two be taken, and two more be taken away, two will be left; from six, two can be taken three times. Clearly these are but varying forms of a single truth, and the evident fact that a child who *senses* the first must *sense* all the rest, underlies the Grube system.

3. While great stress is thus laid on the teaching of each number successively, by comparison, in all ways, with each number below it, and that by abundant objective illustration on a systematic plan, which pupils may soon learn to apply for themselves in studying new numbers, it must not be forgotten that the author strongly insists upon *thorough drill* in all possible combinations of the numbers already learned, within the range of numbers thus studied, and the application of the knowledge so acquired to the solution of many and varied *practical problems.* "The training which the pupil receives from practice with applied problems is different in kind from that with pure numbers, and hence can not be slighted in the primary grades without retarding the pupil's progress in the higher grades. . . . The difficulty which the study of arithmetic presents in the higher grades is not in the mechanical handling of numbers; but it lies in most cases in the fact that the words of the problem puzzle pupils. . . . Wherever sufficient training of this kind (practical problems) has sharpened the wit of the pupils in the lower grades, they will no longer consult the heading of the chapter to find whether the problem means addition or division, interest or long

measure, and find themselves helpless when they meet an example which is not labeled."

Some mistakes concerning this system are so likely to be made by those who try to use it, or by those who oppose it, that it may be worth while to point out, (1) that its chief merit does not lie in a confused jumble of addition, subtraction, multiplication and division; (2) it is not necesary for a teacher who wishes to use this method to shut her eyes to the fact that her pupils may have learned something already about numbers; (3) that the use of the memory is not discarded, but it is given real knowledge to attach itself to rather than words, or forms; (4) that the best test, only satisfactory test, of a pupil's knowledge is his ability to use it.

THAT PROBLEM OF THREE TANGENTS.

Answer to problem 3, (in JOURNAL for April.)

If a triangle be formed by the intersection of three tangents to a circumference, two of which, A M and A N, are fixed, while the third, B C, touches the circumference at a variable point, P, the perimeter of the triangle A B C is constant, and equal to A M + A N.

There is so much in your proposition 3, that I venture to point out a few of the uses to which it should be put. The student should be led to discover:

1. That, if the two fixed points of tangency, M and N, are at opposite extremities of a semi-circumference, the triangle is impossible.

2. That if the fixed points are in one semi-circumference and the variable point in the other, the proposition is not true.

3. In more general terms, if *any two* of the points of tangency are at the opposite extremities of a diameter, the triangle A B C is impossible.

4. If the three points are within the same semi-circumference the triangle is impossible so long as either of the fixed points is between the variable point and the other one.

5. If the variable be between the other points, in the same semi-circumference, (with the point B between A and M), B M = B P, and C N = C P, (tangents from common point.) Therefore A B + B P + A C + C P = A B + B M + A C + C N = A M + A N = 2 A M.

A. J. HUTTON.

Credit for solutions, (similar in part) is also due to Harry Fowler, J. H. Terry, C. V. Burnside, Hy. Severin, Jas. Melville, S. Y. Gillan.

As the problem is general in its terms, less than the above cannot be considered a full discussion. However, most students, before taking up Geometry, have studied enough of Algebra to become familiar with the statement that "if distance from a point along a line in one direction be considered *positive*, distance along the same line in the opposite direction must be considered *negative*." If they can be led to apply this fact, they will see that as P approaches

M, A C and B P approach *zero*, and when P goes beyond M, A C and B P reappear as *negative* terms, hence the sum is not changed. When P is opposite N, C N and C P are both infinite in value, but if C is thought of as beyond A, A C and B P are negative, while if C is on the opposite side of the circle, C P and B P are negative. With this consideration in mind, the proposition will be seen to be true universally, no matter what the position of M, N and P. Students who will take the trouble to study in detail seven or eight of the possible cases will find their reward.

PROBLEMS.

1. Two men, A and B, dig a 100 rd. ditch for $100; A receives 75 cents per rod, and B $1.25, and on finishing each receives $50. How many rods does each dig? B. L. B.

The problem is impossible. If each receives the amount named at the price named, they do not dig 100 rods. If our correspondent really enjoys such puzzles, we suggest that he substitute "six shilling" and "ten shilling" respectively for 75 cents and $1.25, and then worry his "arithmetic" to find out what value of the variable "shilling" will make the problem possible.

2. What is the rate per cent. of profit in buying coal at $5.00 per long ton, and selling at the same price by short ton? G.

The shortest and best solution of the above received will be printed with proper credit. This question belongs to a class of problems easily solved by general principles, but which may have, and fortunately often *do* have, incorrect answers appended in the book containing them.

3. (a.) Let P be the fixed point within a circle whose center is O. A diameter through O and P is the greatest chord possible through P, and its center is at O. The shortest possible chord through P is perpendicular to O P, and its middle point is at P. Let X be the middle point of any other chord through P. Draw O X. The triangle O X P is right-angled at X, (radius perpendicular to chord, etc.) Therefore X is the vertex of a right triangle whose hypothenuse is O P, and is inscribed in a circumference having O P for its diameter.

(b.) If P be outside of the circle, a line O X from the center of the circle to the middle point of that part of the secant within the circle, will, as before, be perpendicular to the chord, and the locus of the point will be the included arc of the circle having O P for its diameter.

T. B. Pray.

Whitewater, Wis.

Everyone must see daily instances of people who complain from a mere habit of complaining, and make their friends uneasy, and strangers merry, by murmuring at evils that do not exist and repining at grievances which they do not really feel.—*Graves.*

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

REST is not quitting
The busy career,
Rest is the fitting
Of self to its sphere.

CHARLES BUXTON has said: "The longer I live, the more deeply am I convinced that that which makes the difference between one man and another, between the weak and powerful, the great and insignificant, is energy, invincible determination; a purpose once formed, and then death or victory. This quality will do anything that is to be done in the world, and no two-legged creature can become a man without it."

IT IS SAID that a young man who expected to enter the ministry, once asked advice of a celebrated divine, and received this answer: "To be a successful preacher you will need three things, viz: Piety, Learning and Common Sense. If you lack Piety, go to God, "who giveth to all men liberally and upbraideth not." If you lack Learning, go to the schools where you will have friends to cheer you on, books and teachers to aid, and multitudes of helps; but if you lack Common Sense, may the Lord have mercy on your soul, you had better quit preaching before you begin." Might not this answer with a little modification also apply to teachers?

HENRY WARD BEECHER said in one of his lectures that when he was a boy he was very fond of hunting, and that although he used a good deal of powder and shot it was a long time before he had any success. One day his father said to him, "Henry, take aim," and when he followed his father's advice he was surprised to see the bird fall. Now, teachers cannot reasonably hope to succeed unless they take aim, and if that knowledge only is useful upon which the mind reacts, which calls into activity some noble faculty of the mind, which enlarges our sympathies, touches our hearts, deepens our sense of the beautiful, causes us to take a step towards the development of some excellence of character, teachers have a definite mark to aim at. That is to be taught which is capable of serving these purposes, and that which cannot is not to be taught, whether it is contained in the text-book or not.

CARLYLE'S words of Sir Walter Scott have always had a charm for me, and frequent meditation upon them but increases this feeling. "And, then, with such a sunny current of true humor and humanity, a free, joyful sympathy with so many things; what of fire he had, all lying so beautifully *latent*, as radical latent heat, as fruitful internal warmth of life; a most robust, healthy man." "A free, joyful sympathy with so many things!" I like his use of the word sympathy in the sense which permits joy in it, and not the restricted sense of commiseration with others in grief. Sympathy gives power over others, gives

new interest in life through the wonderful insight which it permits into nature and humanity. Wherever it is found in a marked degree, there do we witness its unmeasured influence.

ANECDOTES FOR SCHOOL USE.

I. "NITCHEGO."—In 1862, says a Russian paper, Prince Bismarck, then Ambassador of Prussia at our court, was invited to the imperial hunt. Being an enthusiastic hunter, he went to the designated place on the evening before the appointed day in order to have a little sport by himself. Game was abundant, and Bismarck had a good time, but somehow he lost his way. When the time for the imperial hunt approached Bismarck found himself fourteen miles away from the place. A peasant offered his services to take Bismarck to the right place. He appeared with a team of ponies and a village sleigh. Bismarck doubted that the Russian driver could get him there in time to engage in the hunt.

"Are you sure you can get me there in time?" asked Bismarck.

"Nitchego!" answered the moujik, quietly. ("Nitchego" is Russian for "never mind" or "all right.")

"These are rather rats than horses," remarked Bismarck, taking his seat in the sleigh.

"Nitchego!" was the answer.

The peasant whipped his horses and they went as swiftly as a pair of falcons. Bismarck could hardly keep his seat.

"You do not spare your horses at all," remarked the famous passenger, gasping for breath.

"Nitchego!" said the driver.

"You say nitchego, but they may fall dead on the way."

"Nitchego!"

The road was hardly distinguishable through the forest, but the peasant continued his mad run. He brushed against the big trees and went on and on. "You will break my neck!" finally exclaimed Bismarck, scared in good earnest.

"Nitchego!" answered the Russian, with a bit of a smile on his face.

Presently there was a smash. Bismarck flew against a tree and bruised his face. He jumped up very angry, snatched an iron rod from the sleigh, and rushed at the peasant, threatening vengence. The driver coolly picked up a handful of snow, with which he good-naturedly wiped the bloodstains from Bismarck's face. "Nitchego!" he uttered, as he finished the operation.

"That invariably quiet Russian 'nitchego' disarmed me," said Bismarck telling the story to a Russian diplomatist. "I gave myself up to the will of my driver, sat quietly in the sleigh. and made no more remarks. My driver brought me to the place in time. I paid him well, thanking him warmly, and preserved that iron rod. When I returned to St. Petersburg I ordered a jeweler to make me a ring from that rod, with the inscription in Russian, 'Nitchego.'"

The Russian "nitchego" became the watchword of Bismarck's policy. "Whenever," said he, "I meet troubles and dangers, I say Russian 'nitchego!' and then I push ahead."

II. SILENT AND SUPERB CONTEMPT.—Sooner or later a lie is always exploded. Take the case of General Grant. When he began to rise in the army his envious rivals circulated the report that he was coarse, illiterate, and a drunkard. President Lincoln gave a quietus to the charge of drunkenness. But the notable part of the business is that Grant, without replying to a single slander or invention, managed in the course of his career to completely vindicate himself. He never said, "I am not a drunkard," but lived so as to show all the world that he was a sober man. He never denied that Rawlins and others wrote his dispatches, but let the public gradually discover the facts. When it was said that his silence was dullness and incapability, he never claimed that he could make a speech, but when the time came spoke often and successfully in public. People who credited him with no literary ability, found out during the last year of the General's life that he resembled Cæsar in his ability to handle the pen as well as the sword. The wonder is not that these falsehoods were all exposed, but that the silent and superb contempt with which Grant treated them should have triumphantly refuted them all. There is a lesson to be learned by liars from the life of this silent and patient man. No man can be talked or written down except by himself.

III. THE CAMEL'S LUNCH BASKET.—Of course it is not at all surprising that you should carry your own lunch with you when you are going to be away from home all day, but think of an animal doing such a thing! There is the camel, for instance. Everybody knows that it carries its drinking water with it, but it does more; it carries its lunch, too. The hump on the camel's back is not a curvature of the spine, as it may seem, but a mass of fatty material. That hump, in fact, is the camel's lunch basket. When a well-fed, healthy camel starts out on a journey across the desert, its water-pouch is full, and its hump is big. When water fails, the camel has only to draw on its reservoir, and when food is wanting the hump is called upon. Not that the camel helps itself to bites of its hump. That would be a decidedly uncomfortable way of getting a meal, and very likely the camel would rather go hungry than do that. In some way the hump is gradually absorbed, and for a long time after the camel has been unable to find anything to eat, it can get along very comfortably on what its hump supplies it with. By-and-by, of course, the hump is used up, and then the animal will starve as quickly as any other animal.

IV. A BIRD STORY.—A gentleman owned one of those mischief-finders, a magpie. This bird was very fond of shell-fish, so that when his owner placed some pickled cockles in his larder he took special pains to tie parchment firmly over the top of each jar. It was not long, however, before the skin was torn off and some cockles eaten. Nobody could be found who would confess the deed, and thefts were repeated, until the cook, hearing one day a crackling sound in

the larder, hurried in to find Mr. Magpie, with the skin off a jar of cockles, eating away as fast as he could. This so exasperated the woman that she hurled at the bird a ladle of boiling fat which she had in her hand, exclaiming, "So it's you, you rascal, that's been at the cockles!" It was a hard punishment, for all the poor little fellow's feathers came off his scalded head, leaving him bald ever after; and he never forgot the cause of his misfortune, as appeared afterward. One night among some visitors at his master's house was a gentleman with a bald head. The magpie, which had been perched on the edge of a vase, suddenly flew to this gentleman's shoulder, and with his head tipped on one side in quizzical fashion, squeaked out, "So, you rascal, *you've* been at the cockles too, have you?"

V. MAMMA TO PHILIP.—

Once a careless little boy
  Lost his ball, at play,
And, because the ball was gone,
  Threw his bat away.

Yes he did a foolish thing—
  You and I agree—
But I know another boy
  Not more wise than he.

He is old, this other boy—
  Old and wise as you—
Yet, because he lost his kite,
  He lost his temper, too.

OUR BOOK TABLE.

THE INDIAN RESERVATIONS.

THE LATEST STUDIES ON INDIAN RESERVATIONS, by J. B. Harrison, Philadelphia, Indian Rights Association, 233 pp.

The author of "Some Dangerous Tendencies in American Life" is a good observer and an independent and outspoken writer. What he has to say of the Indians and their condition is therefore certain to be suggestive. In the first part of this book he gives an account of his visit to fourteen different Indian reservations. His narrative is brief, charitable and fearless, speaking plainly where plain speaking is needed. For example, he writes: "When I visited the Lower Brule Indians the local administration at their sub-agency was, and had been for some time, miserably inefficient, unprofitable and unwholesome." Yet he is no carper. He finds much to praise, and every where endeavors to see things as they are. The second part of his book consists of the discussion of several important problems connected with the management of the Indians.

We are especially interested in what he has to say of the efforts to educate the Indians. He recognizes the very valuable labors of the missionaries among these people, many of them toiling devotedly with insufficient resources and amid constant privations. "The limitation or defect of the work of the church is in the fact that her leaders and teachers do not usually adequately understand or value the other great world forces besides religion, the fateful power of the State to destroy what is ripe for its end, and to create new social and race conditions." The power of the State enforcing justice, the power of natural law bringing upon improvidence and sloth their certain penalties, are quite as necessary as the power of religion. In fact the government must undertake in a humane and rational way to prepare the Indians for citizenship, and not expect that the charitable labors of Christian teachers are chiefly to effect this great transformation. His criticism, then, upon present educational work for the Indians is as follows: "There is as yet no coherent or comprehensive system or plan for the education of the Indians under government supervision. It does not appear, indeed, that anybody has thought of the necessity of such a system. The existing arrangements, machinery and methods are highly inorganic, incoherent and inefficient. They involve great waste of force, and do not include any practical provision for development or improvement which is not negatived and neutralized by some other feature. There is not anywhere a responsible head or director of the business of Indian education under government management. There is no well defined and far reaching plan for the education of Indians, and there has not yet been such observation of their character and needs by any considerable number of persons, as is indispensable for the development of such a plan." The appointment of teachers and school employes at Washington works nothing but mischief. There is no local authority to remedy grievances, remove incompetence and secure harmony. Poor teachers in a large measure counteract the work of good ones, and the superintendent is a mere book keeper and reporter, without authority in any way to direct the schools. "The legitimate and necessary effect of the existing system is to insure its own perpetuation, and its natural result in Indian character is likely to be the creation of a peculiar type, which we may call *nursing bottle civilization*. Under the beautiful system of things many Indians are likely to conclude that it pays to be Indians, that it is easier to lead a half-gypsy sort of life, a hybrid costume and a half-brute dialect, than to become orderly, hard working citizens. Many of the Indians whom I have seen have gone about as far towards civilization, I think, as we can reasonably expect them to go without a radical change in the conditions under which they are living, and if we wish really to save any of these Indians, such a change must be made very soon."

A DAY IN ANCIENT ROME, by Edgar S. Shumway (D. C. Heath & Co. 96 pp.) It is not to be wondered at that this little book has reached the enormous sale of forty thousand copies. It is in every way an attractive volume. Its mechanical appearance is excellent, it is profusely illustrated, and the narrative it-

self is fresh and bright. Prof. Shumway has in the main translated Dr. Lohr's "Aus Dem Alten Rom," departing from the original only to embody the latest results of excavations, or to illustrate a little more fully some of the points. We stroll with our learned and entertaining guide through the streets of the ancient city, while he opens for us the inexhaustible stores of legend and history which pertain to the sites and ruins by which we pass. Thus we visit in succession the Campus Martius, the Capitoline hill, the Forum, the Palatine hill, the Coliseum, the Circus Maximus and the Janiculum. What memories of greatness and misery, of art and literature, these places call up! To the student of Latin this little volume will furnish both an inspiration and a help to understand more fully the great people whose language he is trying to learn.

GRIMM'S KINDER UND HAUSMARCHEN, by Charles P. Otis, (Henry Holt & Co., N. Y., 351 pp.; $1.25,) is a very admirable book for beginners in German. The stories are fresh and delightful, the deeper meaning of them adds a new interest for older minds, the style is simple, and the words used are those of every day life, which ought first to be learned. In this edition forty-three of the stories are printed. They are well chosen, provided with explanatory notes, and a very excellent vocabulary. The introduction alone is worth the price of the book. It briefly tells how these stories were collected, their nature and real significance as survivals of ancient belief, describes the general features and fixed characters of the tales, and discusses the mode of presentation and the style and form of language in them. This is an admirable preparation for a fruitful study of the tales. In the notes there is a special explanatory and expository introduction to each story. The editing of the book is thus all that could be desired, and we heartily commend it to the attention of teachers of German.

SCRIPTURE READINGS SELECTED FOR THE USE OF TEACHERS AND SCHOOLS, by E. D. Morris (Van Antwerp, Bragg & Co., Cincinnati, 294 pp.) is a novel and interesting school book. The selections are not put together at random, but "in the first half the great truths underlying all religion are progressively presented, especially as they are found in the Old Testament; in the second half, the central facts and teachings of the Christian religion, as they are given in the New Testament. The order of arrangement has thus been partly doctrinal, but chiefly chronological—the order of the scriptures themselves." The selections have been made also for their obvious fitness for public reading, the beauty and grandeur of the language, or the interest and suggestiveness of the incidents. Suitable portions are arranged for responsive reading by using different type for the parts. Another element of interest comes from the use of different versions. The Authorized version is most used, but the Douay Bible, Coverdale's and Tyndal's Versions, the Bishop's Bible and the Revised Version are also quoted, thus affording interesting illustrations of the growth of the English Language.

—FIRST BOOK IN CHEMISTRY, by Mary Shaw-Brewster, (D. Appleton & Co.; 144 pp.) has two features that at once attract attention. It is prepared for the

use of children from eleven to fifteen years of age, and the author assures us that most of the experiments described have been actually performed by children of this age. "These children were farm lads, trained not by school methods, but by daily contact with the ever-changing problems presented by outdoor life. The interest manifested in the work, the quick perceptions and ready inferences, were in striking contrast to the dullness which distinguishes much of the ordinary class-room work." The other feature of the book is its methods. It aims to teach by observation and experiment wholly. The pupil is told little but how to proceed with his experiments; he is to draw his own inferences, to discover for himself what things mean. He is thus to be initiated into the method of science. The experiments are simple, such as he can perform at home, and the material such as most kitchens will afford. He is to keep a history of his doings in a note book, which is subject to inspection. Chemical theory is avoided as much as possible, but the pupil learns about chemical changes, crystallization, precipitation, distillation, glass working, acids and bases, and the common chemical elements.

—THE ECLECTIC GUIDE TO HEALTH, (Van Antwerp, Bragg & Co.; 189 pp.) is a school treatise on anatomy, physiology and hygiene. Hygiene is discussed in connection with each great group of organs, and especial attention is given to the effects of stimulants and narcotics. The brief presentation of the text is supplemented by notes, topical outlines and suggestive questions.

—HOW TO SEE (202 pp.), HOW TO TALK (212 pp.) and HOW TO WRITE (239 pp.) constitute the popular series of language books—prepared by W. B. Powell, Superintendent of Schools in Washington, D. C. The first aims to lead the pupil to express thoughts which are his own. It furnishes material for his thought and suggestions how to use it so as to train him in speaking correctly and in arranging his thoughts in an orderly manner. It is also so arranged that it may be used as a first reading book. The second book carries the work on during the second school year. It aims to expand the pupil's vocabulary, to teach him the proper grammatical forms of words to be used in his sentences, and to carry him forward in composition to treating of more complex subjects. One trained with it will express himself not only correctly but methodically and completely. The third book is the natural successor of the others. Its second part especially seems to us most admirably conceived and carried out. It furnishes training in composition so well planned as to make the exercise a constant pleasure instead of a burden. The essential principles are briefly and clearly taught and illustrated, and the matter for exercises is full of interest and variety. These books have all grown in the class room, embodying the experience of their author, and the teachers who assisted him, for a long series of years. Other works by the same publishers will be found enumerated on another page of the JOURNAL.

—CAPTAIN GLAZIER AND HIS LAKE, (Ivison, Blakeman & Co., 58 pp.) is in its way a very entertaining pamphlet. It is a complete and overwhelming exposure of the pretensions of Capt. Glazier to be the original discoverer of the

source of the Mississippi river. The Captain, indeed, was so unfortunate as to have found nothing which was not well-known before his exploration, and to have drawn for the facts of his story so largely from Schoolcraft's "Narative of an expedition to Lake Itasca in 1832" that when his story and that of Schoolcraft are arranged in parallel columns, as portions of them are in this pamphlet, the effect is surprising. Parts of Glazier's narrative appear to have been constructed with scissors and paste. The exposure of the fraud seems to be complete, and we only feel surprised at the general credence given to it in the beginning.

—THE ADELPHŒ of Terence has been edited with stage directions by Henry Preble, and is issued by Ginn & Co., in a neat pamphlet of 57 pages.

—THE MAGIC PEAR is an ingenious set of a dozen drawing cards, in which the figure of a pear is the base of a number of designs, being, by the deft addition of a few lines, transformed successively into an elephant, a chicken, a mouse, a cat, etc. A bright descriptive text is printed on each card. (Interstate Publishing Co.)

—E. L. Kellogg & Co., New York, issue a little pamphlet called THE BEST ONE HUNDRED BOOKS. It contains Sir John Lubbock's list published in the *Pall Mall Gazette*, and the comments of some forty distinguished authors upon it, of whom John Ruskin is chief. It is entertaining and suggestive reading.

—TEXT-BOOK OF ZOOLOGY, by Henry A. Nicholson, fourth edition, (D. Appleton & Co., 388 pp.) is a familiar book which has gained and held by its merits a foremost place among elementary text-books on this subject. This edition has been thoroughly revised and brought to the present standard of knowledge. The most important recent additions to our knowledge of existing or extinct fauna have been noticed, and fresh illustrations have been added wherever they seemed to be desirable. On the whole we do not know a student's manual of Zoology which is to be preferred before this one.

NEWS AND NOTES.

—The public schools of Sheboygan, E. G. Hazlett principal, gave a public exhibition and school fair early in April. Over two hundred children took part in the exhibition and the attendance of citizens was very large. The fair was made up of articles manufactured by the children, and the lists show varied and ingenious work. The receipts of the first day and the entertainment amounted to $107. More than this, the interest of the citizens in the school and its work was greatly increased.

—Prof. R. D. Salisbury, of Beloit, on the evening of his departure for Europe, was given a banquet at the Goodwin house; and the teachers in the public schools of the city passed resolutions of appreciation and gratitude for his efficient services as superintendent of schools, recognizing the vigor, inspiration and sympathetic support of his administration, and the pleasure and profit derived from the teachers' meetings which he conducted.

—In Sauk county this year fifty sets of papers from candidates for gradua-

tion from the district schools were submitted to the county superintendent for his inspection, and thirty diplomas were issued by him to the successful pupils. They represented fourteen different schools. What county can make a better showing of the results of the grading system?

—One hundred dollars worth of books have been added to the library of the Clinton high school during the past year, and fifty dollars worth of apparatus. H. S. Tibbits is principal.

—Principal Hamlin, of Beaver Dam high school, has prepared for the pupils of his schools a very convenient little eight page pamphlet, giving an analysis of local government, explaining the organization of the school district, town, village, city, county and State. This is the kind of study civics which enables children to understand the institutions nearest to them, and thus prepares them for intelligent citizenship.

—The spring institutes were well attended and of unusual interest and vigor. Some of them were in fact too large to be managed to the best advantage on the old plan, and it is not unlikely that it may soon be necessary to attempt sectioning the larger institutes. In this way the work can be more closely adapted to the needs of the different classes of teachers in attendance. Two of the institutes fell little short of an enrollment of two hundred. We found an admirable spirit and excellent work in the institute at Hudson, in which the city teachers took part earnestly. At Viroqua the attendance was very large, and the wide awake character of the educational work of the county apparent. Owing to a misunderstanding we unfortunately missed seeing the institute at Fond du Lac, which we learn was very large and profitable. Shullsburg had both a good institute and a public spirited interest in its proceedings on the part of the citizens of the place. Would that this were more common than it is. We greatly need to bring the institutes into closer relations with the people in the places where they are held, and it is desirable that superintendents and conductors and all interested should study how this end may be more full secured. At Stoughton the enrollment was excellent, and we have several messages indicating that those in attendance were profited and pleased. We might mention others equally excellent and deserving of praise, but these will serve to justify our opening statement.

—The library of the Dodgeville high school, J. W. Livingston principal, will have added to it more than a hundred dollars' worth of books, the net proceeds of a recent entertainment given by the school. The library now has about five hundred volumes purchased with money raised in this way, besides pictures for the adornment of the rooms, various aids for teaching, and so on,—in all about nine hundred dollars secured thus within a few years. The interest of the people in the school is very greatly increased by such means.

—The report in the Whitehall *Times* of the Institute at Blair indicates that it was enthusiastic and profitable.

—There were 118 applicants for teachers' certificates in Outagamie county at the recent examinations. Only twelve suceeded in obtaining even third-grade certificates. As more teachers were absolutely necessary, permits were issued to fifty-seven others. The result is attributed to the poor wages paid throughout the country.

—Among the additions to the last edition of the Wisconsin Blue Book it

is satisfactory to note the organization and history of the Wisconsin Teachers' Association, and the lists of County Superintendents, City Superintendents and High School Principals.

—The report of the Railroad Commissioner of the State shows that 331 miles of road have been built in Wisconsin since his last report. The most important constructions have been the completing of the Wisconsin Central system to St. Paul, the building of the Burlington & Northern on the east bank of the Mississippi to St. Paul, and the extension of the Minneapolis, Sault Ste. Marie & Atlantic to Rhinelander.

—The Board of Regents of the State University of Minnesota have decided to erect a new Science Hall to cost $9,000, and a new Agricultural building four stories high.

—The program for the Wisconsin Teachers' Association, which meets in Milwaukee July 6 and 7, is not yet completed, but we are advised that the following subjects are to be treated: "The Legal School Age — Four Years or Six?" "The Limitations of the Inductive Method;" "English Grammar and Language;" "Science Teaching;" "The Training of Teachers;" "The Comparative Value of the Branches Taught in the Elementary Schools." Charles Ham, of Chicago, is to lecture on "The Old and the New in Modern Education." An interesting and profitable session is anticipated.

—Ripon is to have a new high school building which will cost $15,000.

—Plans for the new high school building at Elkhorn are completed. It will be two stories high, of brick, and contain nine large rooms, a library and an apparatus room.

—The high school at Portage has recently become possessed of a well-selected reference library of about one hundred volumes, obtained by private subscription.

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Principalship, Texas	1,200	Over 100 Primary and Grammar Teachers for States West of Ohio	$30—70
" Illinois	1,700		
" Kentucky	1,200		
3 " New York	$900 to 1,200		
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SCIENCE IN ELEMENTARY SCHOOLS.

[A Report made to the Wisconsin Teachers' Association]

Your committee appointed to prepare a plan of Science Teaching in Elementary Schools, with accompanying list of apparatus and material adapted to the use of the ordinary school-room, beg leave to report as follows:

Your committee desire to apply the term "Instruction in Natural Science" to such efforts as aim to develop the mind of the pupil by engaging his activities of thought, through observation and experiment, in the field of the more common natural phenomena of both the organic and inorganic creation surrounding him.

Instruction in natural science, according to their acceptance of the term, would embrace more than is now taught in secondary schools as preliminary to Physical Geography; Zoology, Botany, Physics, and, possibly, something of Chemistry. It would embrace more because it would dwell upon common and familiar facts, and would aim less to attain the general principles and remote generalization of those sciences, than to cultivate and develop the powers of the child. The instruction should deal with those obvious facts of Biology and Physics besetting us at every turn, a superficial, casual or sense acquaintance with which is forced upon us by the frequency and commonness of their occurrence.

The present and prevailing curriculum of the elementary school may be described as dealing with three orders of knowledge, to the exclusion of, or ignoring of the value of a fourth order. There are, first, what may be termed, the human branches of knowledge, chief of which stands expression—the mother tongue—its written or printed forms

and usages, including in school parlance, reading, writing, spelling, grammar, and followed or conjoined with history and the human side of geography. In all of these, prevailing systems of instruction emphasize the human phase of the subject, by placing the highest estimate of performance upon representation of the knowledge or subject matter offered for study. Conformity with accepted usage and conventionality of form and orderly and intelligent verbal rendition of the subject matter, meet and satisfy the requirements of the curriculum, the teacher, and the prevailing methods.

There is, next, the science of number and quantity, reinforced and applied from the human side by the most common applications to human needs and experience. The school arithmetic refers to the most commonly useful facts of human customs and experiences to illustrate and apply the principles of the science of number and quantity.

There is, next, a social and ethical side of instruction, indirectly secured by the necessity of the orderly and successful conduct of the school, and directly obtained where the curriculum requires special training in morals, with a view to the formation of good habits and character. Religious teaching may, or may not, enter into this order of instruction. The aim proposed is the same.

The fourth order of knowledge, and one as yet but slightly recognized in practice as an important sphere for the occupations of the school room and the activities of the child's mind, embraces the subjects recommended for consideration by this report, and offered as a part of the curriculum of the elementary schools. As the facts, phenomena, principles and laws discoverable in this are not necessarily dependent upon human existence, and as they constitute an environment or world outside the child, an ultra-human order of facts, such knowledge, for want of a more precisely descriptive title, may be termed "knowledge of nature" and, when systematized and arranged; with a view to expounding laws and principles, may be called "natural science." Your committee recognize the fact that many intelligent efforts have been made to arrange and present schemes of instruction to attain the end they have in view.

The term "object teaching" might properly be used to describe the first series of lessons, or school exercises, in a complete and well digested system of instruction in natural science. But it should be understood that the commonly accepted and practical interpretation of that term,

viz: the use of objects as a means to the attainment of language, is not the aim and purpose of object teaching as herein recommended. Where the subject is introduced for the purpose of cultivating language power, and the estimate of results is satisfied with the tests applied to expression and representation, such teaching fails to attain the higher and most useful end of object teaching. Where correctness of literary or verbal expression is the chief end of the exercise, the development of the observing and reflecting powers, is lost sight of, and training in verbal or literary expression is accepted as the prime object of the instruction.

OBJECT TEACHING.

Object teaching proper is practiced by the use of objects systematically selected and presented in such a manner as to promote the harmonious development of the young mind. It aims to enlarge the pupil's stock of ideas, and to engage, in a healthful and orderly manner, the early mental activities. The facts, objects or phenomena are bought before the child for examination and observation; and knowledge is obtained by actual experience, and not alone by verbal or literary description. Real object training in this sense is necessarily restricted to a limited field in school instruction; neverless the term *objects* may serve to include the phenomena accessible to the whole experience, in school and out. By this extended significance many objects not observable at lesson time may be introduced, by appealing to remembered experience and observations. In the case of phenomena beyond sensible apprehension by reason of distance and magnitude, such as the facts of physical geography, we must have recourse to miniature modeling, or pictorial and diagramatic representations.

The following requisites to the successful conduct of this department of instruction deserve notice:

1. The lessons should follow a natural sequence, and be related, as parts of a good plan. Desultoriness is sure to incur failure.

2. No hasty telling should be allowed to come in between the child's investigation of an object, and his discovery of an attribute, function, property, or quality of that object. When the ideas are obtained, their representation may require the use of new terms which may be supplied by the teacher.

3. Familiar qualities and characteristics clearly apprehended by the

class should not be dwelt upon. The exercise should be directed in search of less obvious properties and ideas new to the inquirers.

4. It is important to know just how far a class should be lead in search of new properties. The teacher's discretion, the ultimate purpose of the lesson, and the consideration of the age and capacities of the children, must practically answer this question.

5. The following scheme is offered as a syllabus of Oral and Object Instruction. It requires no text in the hands of the pupil, printed or or written, dictated or copied.

ORAL AND OBJECT INSTRUCTION,

As the foundation of science instruction to follow, or as the introduction to the same:

I. *Place, Distance, Direction*, (see Calkin's Manual, pages 34 to 44). Form, shape and color.

(1). *Materials Used.*—Splints, seeds, cards, paper in various colors, wax or clay and sand, etc. Slates or trays; wooden spatulas, sharp on one edge, and common six-inch scale rulers.

(2). *Forms*—Geometrical forms—angles, planes, and solids made and named.

(3). *Work.*—Moulding, building, folding, invention and construction (resemblances and forms of familiar objects).

(4). *Color.*—The seven colors, tints. A few lessons on harmony as described on pages 120 to 124 of Calkin's Manual. Use colored paper.

II. FOR CLOSER EXERCISES OF THE POWERS OF OBSERVATION AND COMPARISON.—FIRST ATTEMPTS AT CLASSIFICATION. *Leaf Forms and Parts.*—(See Hooker's Child's Book of Nature). Collect, arrange into classes; "structure and form." Names of principal parts and their use in sustaining life in plant. Common botanical glass. Large book or portfolio in which to paste specimens.

III. *Common Substances and Products.* (1.) *Earths.*—Rocks, sand, soil, mould, limestone, marle, etc. Collect cabinet.

(2). *Metals.*—Iron, lead, zinc, tin, copper, brass, silver, gold, platinum. (*a*) Discovery of common properties by induction and experiment, after a full collection of specimens has been contributed by the members of the class. (*b*) Discovery of special properties by comparison and experiment. In conducting the investigation use the hammer, iron block, pincers, lamp or blow-pipe. Oral lessons. Information.

How metals are obtained from the the earth and prepared for use. (*c*) Utility. Show how the special qualities of each metal have determined to what use it is applied.

(3). *Woods.*—Specimens collected, sawed with and across the grain, the bark left on. (*a*) Examination of wood growth—rings, grain, bark, sap. (*b*) General classification upon qualities of hardness, softness, toughness, lightness, susceptibility of polish or finish, color, etc. (*c*) Utility of each wood. Use determined by special qualities. (*d*) Oral lessons. Foreign woods, great trees, palms, dyewoods. (See Wilson's Manual.)

IV. *Clothing Fabrics.*—Cotton, linen, silk, woolen, cambric, etc. Collection of both manufactured and raw material.

(1). Origin of raw material. Location, manner of cultivation.

(2). Where manufactured? Information relating to uses, determined by special properties or qualities, as warmth, durability, beauty. (Calkin's Mamual, p. 157).

(3). *Foods.*—Native and foreign. Vegetable and animal.

(4). *Miscellaneous Materials.*—Glass, porcelain, India rubber, cork, tar, resin, oils, paints, tobacco, paper, salt, soda, soap, camphor, whalebone, leather, spices, bricks, gunpowder, etc., etc. (See Wilson's Manual.)

NOTE.—Part III., as sketched above, will deviate somewhat from the strict method of object teaching. A considerable amount of information in relation to the above named objects will, of course, be imparted by the teacher. But it should be as closely connected with observable fact as opportunity will permit. The teacher is at liberty to add other topics.

V. DOMESTIC AND NATIVE ANIMALS. Exercises in the classification of animals. Objects observed in the child's out of-school experience. Charts, pictures and specimens used.

(1). *Vertebrates.*—Classes and orders.

(2). *Articulates.*—Molluses, radiates and protozoans.

The matter so far presented, while embraced under the title "object teaching," with the restriction of the term as previously explained, offers ample opportunity for the cultivation of the scientific habit of thought. Orderly and critical observation, analysis and comparison, should be cultivated into mental habits, while demonstration and illustra-

tion on the other hand should promote interest and tend to permanency of attainment.

HIGHER ELEMENTARY TEACHING.

For higher elementary teaching in natural science, the divisions physics, botany or zoology, should be recognized. Physics, as dealing with a larger variety of phenomena affecting the life of the child, and as dealing with numerous facts which condition the existence of animals and plants, is entitled to the first place. As explaining the construction of useful devices and arts for the amelioration and comforts of life, and as explaining the operations of natural law in climate and accounting for the infinite diversity of geograhical conditions, the subject physics may justly claim precedence.

The plan of instruction in physics herewith presented is perhaps inadequately described, and not definitely limited in the mention of details. The catalogue of materials and apparatus includes all that is required to aid the instructor in dealing with the following subjects:

I. *Matter.*— Its properties and states.

II. *Heat.*—(1) Sources. (2) Transmission or diffusibility of heat. (*a*) Conduction. (*b*) Convection. (*c*) Radiation. (3) Expansion. (4) Something about specific and latent heat.

III. *The Atmosphere.*— Its composition. Water Vapor. (1) Compressibility, elasticity, expansibility. (2) Pressure. (3) Phenomena of heat and air—Currents and convection. (4) Boiling point and atmospheric pressure.

IV. *Electricity.*—(1) Common manifestations. (2) Electrical attractions. (3) Conductions and insulation. (4) Induction.

THE MATERIALS AND APPARATUS

Needed in illustration and to aid teachers and pupils are included in the following:

Properties of Matter.— Experiments. Paper, salt, spoon, tumbler, paraffine, glass funnel, glass tube, bottle, straw, aniline, test tube and plunger, pop gun and marble, rubber ball and glass ball.

States of Matter.—Flask, cork, blotting paper, spoon, paraffine, iodine crystals, alcohol lamps, retort stands, wire gauze.

HEAT. *Sources of Heat.*— Key, coin, brass buttons, ruler, cords, bottle, nail hammer, quicklime, plate, thermometer, sulphuric acid, powdered sugar, chloride of potassium, piece of card board.

Transmission of Heat.— Copper, iron, brass, clay and glass rods, two marbles, wire, sealing wax, alcohol lamp, ether, tin cup, flask, sawdust, iron ball or stone, water, pincers.

Expansion of Heat.— Bottle with glass stopper, strong cord, iron ring, with plate to fit, perforated block with marble to fit, aniline, flask, cork, round file, glass tube, pneumatic trough, rubber tubing, wooden block, glass battery jar, hot and cold water, fire ballon, lamp chimney, quantity of ice or snow, salt, basin, alcohol lamp.

Specific and Latent Heat.— Tin dipper, graduated glass beaker, two tin cups, alcohol, murcury, turpentine, basin, spoon, lamp, retort stand, wire gauze, quantity of ice and salt, hot water, thermometer, glass tube, (bent twice at right angles), two flasks with corks and water.

ASMOSPHERE. *Properties.*— Pneumatic trough, cork, paper, bell, glass, tumbler, bottle with close fitting cork having a glass tube passing through it: rubber tubing, test tubes, bottle of ammonia and bottle of muriatic acid.

Composition.— Bell glass with stopper, pneumatic trough, wire, cork, sulphur, tumbler, lime water, candle, glass tube.

To Prepare Carbonic Acid.— Receiver with stopper, pneumatic trough, perforated shelf, plate, sulphuric acid, soda, paper, cylinder and table spoon.

Important Physical Properties.— Vial with close fitting cork, having a glass tube passing through it, colored water, pop gun, air pump, piece of sheet rubber, wide mouth bottle, U shaped tube, flask, vial, receiver.

Pressure.— Bottle, glass tube, light rubber tube, tumbler, jar of water, leather sucker, blocks of wood, iron, air pump, sheet rubber, tumbler, paper, pneumatic inkstand, atomizer, small glass tube and pipette, pneumatic paradox, sheet of thin rubber, glass funnel.

Measure of Pressure.—Barometer tube, mercury, deep saucer, colored water and pipette.

Pneumatic Hydraulic Machines.—Siphon, U shaped tube having equal arms, several bent tubes having unequal arms, tin pail, with siphon-shaped attachment, lift pump and force pump.

Heat and Air.— Piece of candle, flat block of wood, lamp, lamp chimney, piece of light cotton or feathers, retort stand, flask, cork, water, thermometer, air pump, sulphuric ether.

ELECTRICITY. Glass rod, rubber ruler, piece of silk, woolen cloth, two electroscopes, tin foil, wooden ruler, stick sealing wax, glass plates,

copper rod, sheet of zinc, silk ravelings, bottle with straw balance, board.

In conclusion, your committee desire to emphasize the following points in regard to the method of teaching science by resort to the use of objects and experiments:

In teaching by objects and experiments, we should clearly distinguish between that interest which is no more than the manifestation of curiosity prompted by the novelty of the things set before the class, and that more intelligent interest which accompanies well guided inquiry and a desire for knowledge. There will naturally arise a curious interest and attention on the part of the class as the teacher brings forward his objective and experimental illustrations, but the most difficult part of his task will be to arouse the interest to active and profitable inquiry, to direct the observation of the child in such a way as shall pointedly promote systematic and logical investigation. The experiments are not to afford amusement or diversion, but to train the mind to observe and reason upon matters of fact,—to see conditions and resulting phenomena clearly—to distinguish cause and effect in visible sequence, and lastly, to express the knowledge so obtained with correctness and precision. According to this method, we do not begin with definitions, but with things, not with classes but with individuals, not with principles, but with facts and phenomena.

Definitions and terms come first by objective application, and the restrictions of technical terms to their legitimate use is taught by experience and the need of precision in describing or explaining the phenomena under investigation. So it is with principles and laws. The facts or phenomena must first be clearly observed and described: Second, changes occuring when the conditions are modified or new arrangements made, (the performance of the experiment) should be stated with order, fullness and exactness; and third, the principle, general fact or law illustrated or verified should follow as a conclusion and result of correct inference and reasoning. In short, the end and aim of the illustration, as here recommended, is not entertainment but the natural and orderly development of the mental faculties, and that with due regard to the child's destiny, whether it be to pursue higher education or to enter early into active industrial life.

WM. E. ANDERSON,
F. H. KING,

Committee.

IN THE LIBRARY.—SCHOOL INSPECTION.—II.

10. *Object Lessons, or Language Lessons— Gallery Lessons in Infant Schools.*—Whether the principal teacher is a probationer, or known to him or not, it will probably be desirable that the inspector should hear her give a *gallery lesson.* Young teachers of infant schools are sometimes apt to think they can do this well, but have generally much to learn in it. And older teachers, unless called upon by the inspector to give such lessons, are apt to get careless and slovenly in them. There are few parts of the teacher's art in which practice is more important, or in which time and trouble are more often misspent. I have seen a gallery lesson given in an infant school, in a great town, by a teacher newly come from a training college, to a class of twenty or thirty children, averaging from five to seven years, with one or two lady managers sitting by in smiling satisfaction, which was perfectly useless as a means of education. The children did not understand half the words that were used, and though they preserved a grave and apparently attentive demeanour, they were unable, within two minutes of the end of the lesson, to answer the most rudimentary questions on the lesson, or, in fact, to tell one word of what the teacher had been talking to them about.

11. *Mistakes in Gallery Lessons.*—In inspecting a collective or gallery lesson, whether given by the principal teacher or by one of the senior pupil-teachers in the infant school, the inspector will bear in mind those faults which his experience teaches him are most commonly made by teachers in giving such lessons, and will look carefully to see how far the teacher whose work he is inspecting is free from them. The following may be mentioned as among the most common of such faults:

(1). *As to the Matter of the Lesson.*—(*a*) *Not Preparing the Lesson Carefully Beforehand.*—No collective lesson ought ever to be given, no matter how simple the subject may be, without preparation. One of the most distinguished and successful of the head-masters of our public schools once told me that he never felt it right to give a lesson to his sixthform, even in so well-known an author as Virgil, without preparation. Yet he is one of the best scholars in the country, and must be familiar with almost every line of that author. And no doubt that this is the right view for a teacher to take of the work of teaching. If an infant school teacher does not carefully prepare her collective lesson, the

the result is very soon apparent to an on-looker. The unprepared lesson will be unmethodical, ill-arranged, showing want of reflection and resource, and generally inadequate to the subject and the occasion. Teachers who do not prepare their lessons become more and more inefficient, instead of improving, as time goes on. *Every teacher should keep a note-book, to be used on purpose for the preparation of lessons.* And the inspector should, when he inspects the infant school, inquire whether the principal teacher keeps such a book and accustoms her pupil-teachers who have passed their third year to do the same. He should ask to see these note-books, in order that he may form some opinion of what is the work which has been done by the teachers in the infant school by way of preparation for the instruction to be given to their scholars. If no such notes are kept or forthcomming, the inspector will ask a few questions, such as, "On what subjects have you given object lessons, or lessons in Natural History, or any collective or gallery lessons during the past year?" Then taking one of those lessons which has been recently delivered, he will inquire what steps the teacher took to prepare for delivering that lesson. If no such preparation appears to have been made, the inspector will of course call attention to this grave defect in his report. And if it appears that some attempts have been made to prepare, but that no notes have been taken or kept of such preparation, the inspector will point out the advantages of taking and keeping such notes, not only for the sake of the scholars, but also for the sake of training young pupil-teachers. The preparation note-book of an experienced teacher is a most valuable aid to a young pupil-teacher in teaching her how to prepare for a lesson, where to go for her materials, and how to manage them. It is also most useful to the inspector when he comes to ask the upper classes of the infant school questions on the gallery lessons which have been given them during the last few months; because, if the preparation note-book is put into his hands, he can see exactly what the children are supposed to have been taught, and on what it may be fairly expected that they should answer his questions. Every time that a lesson is given from the notes entered in the note-book the date of delivery of the lesson should be affixed to the notes. This will not only help the teacher in reviewing or going over back work, but will also serve as a guide to the inspector in weighing the results of any examination, conducted either by himself or by the teacher on his behalf and in his presence.

(*b*) Another fault which may be noticed under this heading is that of *not giving a lesson in plain, homely tanguage, or dwelling on those points in it which come home to the children.* This is not an uncommon fault of object lessons. Such lessons sometimes consist of little more than a string of attributes, described in long names of Greek or Latin origin. It is scarcely necessary to say that such lessons are worthless, and disgust children with their school. The inspector will notice whether the class in coming to its gallery lesson is lively or dull. If the gallery lessons given in a school are good, the children will come to them with a sense of pleasure; they will know they are going to hear something interesting, and will be on the tiptoe of expectation. But if all that is going to be done with them is to hold up a piece of coal, or of wool, before them, to tell them its properties in long out-landish words, and to expect them to repeat those words after the teacher, they will of course be listless and dull. The curiosity of the young is so great, their desire for information on matters which interest them is so keen, that a teacher who takes pains will have no difficulty whatever in rousing them. Her difficulty will rather be to moderate their excitement. No object lesson should ever be given without the accompaniment of a little story or anecdote. This will not only help to fix the information given by the lesson in the children's minds, but will be repeated by many of them to their parents at home, and will serve to interest the parents in the work of the school.

(*c*) Another fault which may be mentioned under this heading is that *some teachers do not make the most of their resources.* I have known an infant school teacher complain that the managers did not furnish her with an object-box, and give that as an excuse for not having delivered any object lessons during the course of the past year, while all the time there were pictures hanging on the walls of the school-room from which she might have given a course to last several years, and while the county all round was teeming with natural and artificial objects of interest. I remember once, in the county of Durham, taking down from the wall of an infant school an excellent coloured print of a rhinoceros, and asking the first class, who were chiefly pitmen's children and fairly intelligent, some questions about it. Not one of them knew what it meant; they had never been told anything about it. At last, after a careful and wondering study, one little boy said "It's a coodie," meaning thereby a donkey; cuddy being the equivalent of Cuthbert, by which title,

for obvious reasons, the donkey is there known. One would scarcely have thought it possible that a teacher of infants should have spent a year in working with them, in a room where there was such a picture, and not have talked to them at all about it. But no one who has not been an inspector of schools can imagine how wanting in resource, adaptation, and the general power of making the most of their materials some of our trained teachers are.

(2). *As to the Manner of the Lesson.*—The inspector will look to see whether the class is under proper control, and whether it is judiciously arranged in the gallery; whether the older and more steady children are put at the back, and the younger children in front, so as to be nearer to the teacher; whether the teacher takes up a good position before the class and keeps it. I have seen a teacher, when delivering a gallery lesson, walk up and down in front of the class the whole time of the lesson, like a wild creature in its den at the Zoological Gardens, thus always having her back towards some portion of her class. It is hardly necessary to say how bad such a practice is for all concerned, both teachers and scholars. The inspector will also look to see whether the apparatus required for the purpose of the lesson, such as a picture, is properly placed, in a good light, and so that all the class can see it readily. He will notice whether the teacher shows too little vigor, or misdirected vigor; whether she makes her voice reach all the class clearly, without screaming or unduly raising it. He will carefully note all these and similar faults, and will speak to the teacher about them, as well as about her merits, at the close of the day's inspection.

12. *Gallery Lessons by Pupil-Teachers.*—If there is a fouth or fifth year pupil-teacher in the school, it is essential to hear her give a gallery lesson. The previous pupil-teacher examination should have given, as notes for a lesson, a choice of two or three subjects suitable to infants. The inspector will make a point of having looked over the pupil-teacher's work before he comes to the school; and he will do well to require fourth and fifth year pupil-teachers to hold themselves in readiness to give one of the lessons for which notes have been written at the examination. Only so can theory and practice be properly connected. No inexperienced person would believe how they become disconnected in some teachers' minds. I have known a school in which "notes of lessons" were regularly prepared by the pupil-teachers for the principal teacher, but in which not one such lessons was ever delivered. Incredi-

ble as it may seem, I found, on inquiry, that no lessons were ever given from the notes prepared, and no notes were ever prepared for the lesson actually given. In well-written notes of a lesson, the teacher has the class, in her mind's eye, always before her, and the spirit of practice breathes through the written notes. The inspector will give notice at the previous collective examination of pupil-teachers that fourth and fifth year pupil teachers must be prepared, not only to deliver a lesson if required from the notes written at the examination, but also to hand in to him some half-dozen copies of notes, made during the past year, from which he can select a lesson to be given. If a pupil teacher has written bad notes, at the examination, nothing will bring home her defects more to her and to the principal than making her try to deliver a lesson from them. And of course it would not be fair to take those notes only as the invariable test, because notes for a lesson require, and ought to imply, careful thought and study beforehand; so that these written at the examination are after all but an imperfect test of what the pupil-teacher could do for her class, in the quiet and leisure of her own room. The inspector will require the principal to be with him when a fourth or fifth year pupil-teacher gives her lesson. And he will do well after having carefully taken his notes, to ask the principal such questions as these—"What observations do you make on that lesson?" "What faults do you find?" "What was good?" This will make her realize and turn her attention to correct her pupil-teachers' faults in the course of the year.

13. *Examination of the Infant School.*— Having finished his *inspection* of the infant school, that is to say, having satisfied himself of its condition as to order, method, arrangements, the teaching power of the principal, and assistant, certificated teachers, and the means taken to train the pupil-teachers, the inspector will proceeed to his *examination.* It may be said—"Surely you cannot examine infants." "What can there be to examine infants in?" Of course in an infant school inspection is a proportionately greater affair than in an upper school, and examination is comparatively unimportant. Still even here examination is necessary and valuable. The subjects of examination will be such as —*First,* the reading, writing, and arithmetic of the older children. *They should all begin to learn the multiplication table as soon as possible, and to learn it as accurately as possible. Next,* recitation, that is saying by heart passages from the poets and from standard authors;

the importance of which cannot be over-rated. *Next*, the collective lessons of the past year. The inspector will take into his hands the preparation note-book of the teachers (see § 11); and, by questioning the children himself, and by requiring the teachers also to question them, will very soon find out whether good work has been done in gallery lessons during the past year. He will also look to the manual and other exercises of the scholars, whether accompanied by singing or not. A list of these exercises should be placed up in the school, so that the teachers may be reminded to practise and go through them regularly.

The inspector will not forget that, when once he has begun the examination of the scholars, he is to a certain, though only a partial, extent responsible for the order and discipline of the school. When the routine of the children's work has been altered, and the inspector is himself addressing them, and otherwise taking their classes into his own management, it would be most unfair to find fault with the teacher for any little defects of order. The intervention of a third person between the teacher and the scholars must be regarded as transferring part at least of the responsibility for the order of the school to that person. And this will be more the case in an infant school than in an upper school, as the children are younger, and have acquired less settled habits of self-control. Indeed it will, in an infant school, be more often desirable that the inspector should require the teachers to conduct the examination for him, than that he should attempt to do it himself. Very few men examine infants really well. Women are naturally much better qualified for such a task. As a general rule, an inspector may be content if, knowing what ought to be done in an infant school, and what may fairly be expected of the scholars, he gets the teachers to act under his orders for the examination of the children in the results of the instruction which has been given to them.

14. *Conference with the Teachers.*— When the inspection of the school and the examination of the children are ended, and the children have all been dismissed, the inspector will call to him the whole staff of the school, for the purpose of remarking on the papers worked by the pupil-teachers at the collective examination; of commenting on their faults and merits as teachers, as shown by the inspection and examination; and, as far as possible, of telling them how to amend such defects. I look upon this process, for which the inspector will be careful to allow time, as one of the most valuable parts of his duties. But as a more

complete account of the process can be given in connection with upper schools, I defer my suggestions on this matter till I come to treat of the inspection of the boys' department. (See § 59.)

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

WHY WE MUST SLEEP. We have seen that every muscle, after a period of action, requires a period of rest; and this is not only true of the muscles themselves but of the nerve centers which stimulate and control them. Indeed, we should come early to realize that not muscles simply but every active organ of the body must be sufficiently rested after its periods of activity, if health during a long life is to be maintained. We have seen that the activity of all tissues throughout the body requires the superintendence of some portion of the nervous system, and from this it follows that whenever other organs work the nervous system must work also. Sleep is the condition which follows when the nerve centers, within the skull especially, lay down their work for a period of rest. It is just as impossible for the cerebrum to think continuously as it is for the muscles of the arm to hold it extended unceasingly; and so rest is needed, and natural sleep is the condition of nearly complete rest for that greatly burdened ganglion.

WHY WE LIE DOWN TO SLEEP. If a person drops asleep while sitting in his chair his head falls and his limbs and body slide into the positions requiring no muscular action to sustain them. These facts teach that sitting or standing requires the constant vigilance of a part of the nervous system. Not only this, but while standing or sitting the heart beats faster, we breath more times in an hour and sweat more, these activities being required to meet the demands of supply to and removal of waste from the muscles and nerve centers engaged. When we lie down the greatest possible number of muscles are thrown out of action and their controlling nerve centers are allowed to rest, while at the same time there is less need for oxygen and blood in these organs, and less waste materials to be removed from them; and this greatly diminishes the burden upon the sympathetic nerve centers, and they, like the heart, find their rest in the slower rate of action that is now demanded of them.

WHY SKILLED LABOR IS LESS FATIGUING THAN UNSKILLED LA-

BOR. Everyone who has learned to do a thing requiring the use of muscles in unaccustomed ways has realized that the new work is much more fatiguing mentally than after the process becomes familiar. There was a time with each of us when to walk required extreme attention, and were such attention required now the effort would be so fatiguing that we should have little mental energy left for other work; and I suppose it is in part this strain upon the brain in very early childhood that makes it necessary for little children to have more sleep than when they become older. How it is that the familiarity which comes with repeated doing makes the mental strain necessary to do it so much less we cannot say, but that it is a fact there can be no doubt; and it is this fact which makes it possible for one to become much more skillful in telegraphy or shoemaking, for example, and do much more in the same time with less fatigue. Is is the same fact too that lies at the foundation of what we call habits, whether they be good or bad. For those who have formed correct habits in writing it is as difficult to write poorly as it is for a person having faulty habits to write well.

THE BAD EFFECTS OF WORRY UPON THE BODY. Whenever the the mind is in a despondent state, or there is continual worry, its effects upon the body as a whole are even worse than over-work; when in this condition the mind seems both partly to paralyze and to distort the natural action of very many of the organs; the heart is made to beat unnaturally, the kidneys fail to remove the waste materials from the body as they should, and we neither relish nor properly digest our food. It is this powerful influence over the body as a whole both for good and bad, which the mind through the cerebrum has, that has made it possible for so many people to be helped by what is called "mind cure." Whenever sickness results from or is protracted by this bad effect, of course, the proper medicine is that which restores the mind to its normal state. We must not infer, however, that some people have a peculiar power in this direction, any further than that we may have greater confidence in one person than in another, or that we are more readily attracted to one than to another. It is under such circumstances as these that alcoholic beverages may sometimes have a good effect, and like other medicines tend to restore health; and were it not for the very great temptation to extend this use beyond the point where it does good, it might be serviceable far beyond what it now is.

EFFECTS OF STIMULANTS AND NARCOTICS UPON THE NERVOUS

SYSTEM. One of the first effects of alcohol upon the nervous system is partially or completely to paralyze that portion which controls the size of the small bloodvessels, causing them to dilate, and all organs in consequence to become unnaturally flooded with blood, so that a condition tending toward congestion results. Not only this, but the unnatural rush of blood through nerve centers during the time for sleep disturbs them, and their rest is imperfect. Still another effect follows this paralysis. The general temperature is lowered, partly by a more rapid loss through the skin, which is now gorged with blood, and partly by a slackening in the body the vital processes which generate heat. With birds the temperature has been lowered 5½° by this means. With man the temperature may reach 2½° to 3° or even more below the normal. The sensation of warmth resulting from the excess of blood in the skin is the explanation of the delusion that alcohol warms the body. The second direct effect is to diminish the power to control the action of the voluntary muscles, and to diminish the sensitiveness of the end organs and their nerve centers. Under these conditions movements which naturally are unconscious must now be superintended by the direct action of the cerebrum, which as we have seen, must bring an additional burden upon it. Again, a person after taking alcohol may feel rested and more vigorous, but this is in reality due mainly to a deadening of his sensibilities to fatigue; and both tobacco and opium have the same delusive effect. The person is not rested, he simply becomes unable to appreciate that he is in reality tired. People say they can think more clearly under such influences, and this may be true in overworked subjects; but they simply are not distracted by a sense of their weariness, which nature has so wisely intended as a safeguard against overwork. But the most lamentable effect of stimulants and narcotics is upon the nervous tissue. The emotional centers of such victims are more excitable, while the will-power, which should control and direct the actions which follow naturally from feelings, is weaker when, under the circumstances, there is need for greater strength; and the result is that those nerve centers which lead to unconscious or semi-conscious action determine the course of action, and the victims have become slaves to circumstances.

CIRCULTORY SYSTEM.—LIGATION OF THE FINGER, AND STUDY OF THE PULSE.—OBJECTS OF THE LESSON: To teach that: 1. Blood is moving at all times through nearly all parts of the body. 2. The blood

is propelled by a very powerful muscle through a set of tubes leading out of the heart through the various organs and back to the heart again. 3. The objects of this circulation are to supply food to the tissues, to remove waste from them, and to carry heat generated in the tissues to the surface, where it may escape.

Wrap a stout string several times about the forefinger just below the first joint. Very soon the end of the finger swells, becomes of a dark blue black color, and a sense of fullness or pressure is felt. Now remove the string. A pale, depressed ring is noticed where the string was applied, which quickly becomes flushed and in time disappears, the swelling goes down, the sense of pressure is relieved, and the natural color of the end of the finger is restored. What has caused these changes, and what may be learned from them? The swelling and the change of color together indicate that blood has passed under the string into the end of the finger, and from this it follows that there must be passage ways for it to move in. The return to the natural state again after the string was removed proves that the blood which enters the end of the finger comes out again, and that it returns by passages other than those by which it entered; for if this were not so the same cause which prevented the escape of the blood from the finger should have prevented its entrance. It is plain too that as the blood enters the finger by one way and leaves it by another, these two systems must be connected one with the other. Not only this, but there must also be either some difference in position or some difference of structure between these two sets of passages, or else the same string could not have closed one and not the other. The feeling of pressure which was gradually augmented proves that some strong force was acting upon the blood to drive it into the finger. Now place the right forefinger snugly upon the pulse, on the under side of the left wrist back of the thumb, and notice closely. A distinct throbbing, recurring at regular intervals, is felt; and close attention will show that the pressure is first felt upon the side of the finger away from the hand and last on the opposite side, as if something were really passing under the finger; which is true, the stream of blood entering the forefinger passes this spot. But how was it that the blood entering the end of the finger did not return by the way it entered during the interval between the pulses? The tubes must have remained open, and it could not have been an acccumulation of blood further back which retained it in the finger, else the sense of pres-

sure would not have been confined to the finger's end. Take a piece of strong wool twine long enough so that when the two ends are tied together it will reach around the arm above the biceps muscle. Put the string around the arm of one of the pupils in the place indicated, and run a ruler through the two ends of the cord. Let the pupil find his wrist pulse and while he is noting it twist the string tightly by means of the ruler. His pulse will become imperceptible. Loosen the string and tighten it repeatedly. With each change the pulse is felt and then disappears again, showing clearly that the blood which passes through the wrist comes from the upper portion of the arm. Next, place one leg upon the knee of the other, so that the knee of the limb resting on the floor presses snugly into the hollow of the other knee. If the right position has been secured the tip of the toe will be seen to move upward a little at regular intervals. While watching the movements of the toe find the pulse of the left wrist with the right forefinger, and at the same time place the left forefinger upon the pulse of the right temple. It will be observed that the pulse at the wrist and the temple occur sensibly togther, and with the movements of the toe. Next, divide the girls of the class in twos and the boys in twos. Let Nos. 1, find the pulse of the left wrist of Nos. 2, with the right forefinger, and when it is distinctly felt let Nos. 1 place the left ear snugly against the left side of the chest of Nos. 2, just over the heart, and listen attentively to its beating; let them ascertain whether or not it coincides with the pulse at the wrist. To my ear it is difficult to say which comes first, but in many cases my pupils say that the heart-beat is just before the pulse at the wrist, which of course is the fact. Boys, if they have coats on, should unbotton them so as to allow the ear to come against the vest. The girls' garments will not interfere with the observations. From the existence and coincidence of the pulse in such distant parts of the body as the wrist, temple and knee, and the coincidence of the heart beats with them, it follows that the blood is on the run all through the body, and that its movement is definitely connected with the beating of the heart. Another way to arrive at the result of the last experiment is to divide the class into threes, and allow one pupil to count the number of pulses in a minute while a second pupil listens and counts the number of beats of the heart during the same time. While these experiments are being performed each pupil should be allowed to hear the sounds of the heart and note carefully their character. Having come so nearly

into definite contact with the circulatory organs we should be able now to form quite a definite, and, so far as it goes, correct conception of the nervous system as a whole, and of what it may consist; and we are, therefore, prepared for a concise statement of what the system is, and to enter upon a detailed study of it.

We have seen that our bodies are made up of an immense number of working individuals called cells, each one of which must be supplied with food by which to grow, work and reproduce; and at the same time they must have the waste materials resulting from activity removed to the outside of the body, from whence food must come and to which waste materials must go, since it is impossible for them to be supplied directly; and hence we have in our bodies a circulatory system, whose function is to carry food and oxygen to every cell in the body and to carry the waste products and heat away from them. The circulatory system consists of a very powerful central pumping organ, the heart, whose steady throbbing and peculiar sounds we have heard, which does daily on the average an amount of work equivalent to lifting 19 tons more than ten feet high. Leading out from the heart are two large, strong, elastic tubes, the pulmonary artery carrying blood to the lungs, and the aorta carrying blood to all other portions of the body. These arteries branch in their course, and it was one of these branches which we closed by means of the string around the arm, and still smaller ones through which we felt the blood passing at the wrist and temple, while smaller ones still carried the blood into the end of the finger under the string. In the tissue of the finger, and in all other tissues to which blood is carried, the small arteries become still smaller tubes, called capillaries, having very thin walls through which the food passes out to feed the cells and the waste products enter to be carried away. These capillaries are the connecting passages which we have seen, from our experiments, must exist in the finger, and they unite into larger and larger branches which are now called veins; these have thinner walls than the arteries and lie nearer the surface of the body, which explains how the string closed them while it did not close the arteries. In both the capillaries and veins are numerous valves, which allow the blood to come into them from the arteries but do not allow it to pass backward again, as our experiment has shown. As the veins run into one another on their way back to the heart they become larger and larger trunks, and finally end in six, two bringing blood from all parts of the body, and four from the lungs.

Thus the heart, with each stroke, pumps blood out of itself through the arteries and capillaries within reach of the various cells of the body, and back into itself again through the veins.

EXAMINATION OF THE HEART OF A CALF OR SHEEP. Request the butcher to remove carefully, without cutting, the heart and lungs of a calf or sheep. Keep both moist until ready for use. First cut the wind-pipe off at about its middle; insert into this a tin or glass tube about one half an inch in diameter, and force air into the lungs so as to fill them completely, causing them to stand out and surround the heart as they do in nature, thus showing the natural relation of the organs. Next we notice the heart case, which surrounds the heart like a loose sack; cut through this and turn it back upon the heart. Notice the two collapsed, ear-like, muscular organs at the base of the heart. These are the two auricles or chambers into which the blood is poured—into the right from various parts of the body, into the left from the lungs. Notice that the main bulk of the heart is composed of the the two ventricles which have most of the work to do, and that the distribution of bloodvessels in them shows where the division between them is. Press the heart case and lung tissue away from the heart, until the bases of the two great arteries leading one out of each ventricle are exposed. With a knife cut and press carefully the tissues away from these two trunks until you have exposed the whole arch of the aorta with its first branches. While doing this several of the large veins leading into the auricles will be discovered. Note how much thinner their walls are than those of the arteries. The whole lung tissue should now be cut away, leaving only the stubs of the two great arteries connected with the heart. To do this, first draw the left auricle up from the ventricle and cut around its base just above where it joins with the ventricle, taking care not to cut the walls of the latter. Now turn the auricle inside out, and notice that smooth, cord-like muscles cross one another at various angles and have their ends inserted in the walls of the auricle. Next introduce into the cut end of the aorta the tube used in filling the lungs with air, slipping it gently down until you see that the end is evidently in the left ventricle. Grasp the aorta with its branches, pressing them tightly around the tube so that no air can escape, and blow *quickly* and *forcibly* through the tube. Immediately the mitral valves fly shut and prevent the air from escaping. Now, while each member of the class is allowed to see these valves, alternately draw air into the mouth

through the tube and force it out again. One mitral valve will be seen to be much larger than the other, and thus to close most of the opening between the ventricle and auricle. Notice also that each time the mitral valves close the large bloodvessels seen on the walls of the heart swell out in consequence of the air which is forced into them. In this way the means by which the heart itself is supplied with blood is shown. Next cut a slit into the side of the left ventricle, beginning *near* but not *at* the auricle and extending it downward to the apex of the heart. Spreading the cut edges apart the pupils may now see the valves, with their edges secured by tough cords attached to the summits of little muscular cones situated on the walls of the ventricles. These serve to secure a perfect action of the valves, by not allowing them to be crowded through into the auricle when the blood is being forced out through the aorta. Insert the tube once more into the aorta, but do not pass it clear through. Hold it tightly, as before, so that no air can escape. Blowing suddenly and forcibly through it, the semi-lunar valves, which are situated in the mouth of the aorta, will be closed, and the pupils may see them act as you alternately draw air through them and attempt to force it by them again. With a pair of scissors split the aorta down to its entrance into the heart, and the three pocket-like valves with their thickened points which before were seen in action may be observed, delicate, very flexible but strong. As these valves did not allow the air to pass by them so they do not allow blood, which the ventricle has forced into the arteries, to return again. It will not be necessary to demonstrate the action of the valves in the side of the heart, as they work on the same plan. Make a slit in the right ventricle, and compare the thickness of its walls with the thickness of those of the left ventricle. By splitting open the pulmonary artery its three semi-lunar valves, corresponding to those of the aorta, may be seen. The walls of the pulmonary artery will be seen to be thinner than those of the aorta; the inner surface of both will be seen to be very smooth, and drawing upon the arteries their elasticity will be evident.

The heart of a gopher may be used in place of that of a calf or sheep, but it requires more delicacy of touch and skill to demonstrate the various points; a slender straw or quill may be used in place of the tube.

F. H. King.

River Falls, Wis.

OFFICIAL DEPARTMENT.

THIRTY-FIFTH ANNUAL SESSION OF THE WISCONSIN TEACHERS' ASSOCIATION TO BE HELD IN THE HIGH SCHOOL ASSEMBLY HALL, (CORNER CASS AND KNAPP STS.) MILWAUKEE, JULY 7 AND 8, 1887.

PROGRAMME.

Wednesday, July 7th, 9 A. M.

PRESIDENT'S ADDRESS.

BUSINESS.

REPORT OF COMMITTEE:—LIMITATIONS OF THE INDUCTIVE METHOD: by Pres. A. Salisbury, Whitewater. Discussion, by J. W. Stearns, Madison, and Pres. D. McGregor, Platteville.

SUBJECTS TAUGHT IN THE ELEMENTARY SCHOOLS: Pres. J. J. Mapel, Milwaukee. General Discussion.

Afternoon Session.

ENGLISH IN OUR SCHOOLS: Prof. A. R. Sprague, Racine, and Miss Mary L. Avery, Whitewater. Discussion by Prof. I. N. Stewart, Appleton, and Prof. L. D. Harvey, Oshkosh.

READING CIRCLE WORK: Prof. J. G. Skeels, Sharon.

THE LEGAL SCHOOL AGE: General discussion, opened by Prof. E. O. Wells.

BUSINESS.

Evening Session, 7:30.

ADDRESS:—WOMEN AND EDUCATION: by Miss Rose C. Swart, State Normal School, Oshkosh.

Reception tendered by the teachers of Milwaukee public schools.

Thursday Morning, 9 o'clock.

REPORT OF COMMITTEE ON SCIENCE TEACHING IN THE ELEMENTARY SCHOOLS: Dr. J. W. Stearns, Chairman. Discussion by Prof. A. J. Hutton, Prof. Geo. Peckham, and Prof. Rogers.

HOME AND SCHOOL: Miss Margaret Conklin, Milwaukee.

Thursday Afternoon, 2:30.

THE PLACE OF NORMAL SCHOOL GRADUATES IN THE WORK OF TEACHING: Ass't State Sup't W. H. Chandler. Discussion led by Prof. A. F. North, Pewaukee.

REPORTS.

BUSINESS.

ELECTION OF OFFICERS.

Thursday Evening, 7:30.

LECTURE:—THE OLD AND THE NEW IN MODERN EDUCATION: Charles H. Ham, Chicago.

HOTEL RATES.

Plankinton House, $2.50 to $5.00 per day; Republican House, $1.75 to $3.00; Kirby House, $2.00 (uniformly); St. Charles Hotel, $2.00; Grand Avenue House, $1.50 to $1.75.

RAILWAY RATES.

Persons eligible to membership in Wisconsin Teachers' Association, in order to avail themselves of reduced railway and hotel rates,

1. Must go to Milwaukee on July 5 or 6 and return on July 8 or 9.

2. On all railways in Wisconsin, except as hereinafter noted, members must purchase full fare tickets to or towards Milwaukee, *and* demand a "certificate" from the rail road agent selling the ticket.

3. Must present the "certificate" to the Secretary of the Wisconsin Teachers' Association in Milwaukee, in order to secure reduced railway fare returning, or reduced hotel rates.

NOTE.—The Milwaukee, Lake Shore & Western railway will sell *round* trip tickets in lieu of "one-way" tickets for this purpose.

4. Any member of the Wisconsin Teachers' Association wishing to attend the meeting of the National Educational Association at Chicago, can have the time of his *return* ticket extended if application is made to the undersigned in Milwaukee, July 6 and 7.

W. D. PARKER,
Ry. Cl'k W. T. A. Supt. Transp'n N. E. A.
W. E. ANDERSON, President,
A. J. HUTTON, Ch'n Ex. Com.

EDITORIAL.

AMONG the most delicate and trying duties which fall to the county superintendent is that of dealing with candidates for teacher's certificates whose examinations do not show fitness, and yet who have such a measure of excellence as to make it difficult to reject them. The first and immediate difficulty is with the candidates and their friends; the remote and more important one is with the effect of laxness upon the schools of the county. As an administrative officer he must have a policy, either deliberately chosen or as rigidly fixed by precedents which he has established. He must be strict or lax; and if he is lax the whole

county suffers in consequence; its teachers lack incentive to thorough preparation; its schools fall into the hands of incompetents; the defects of the teachers are seen exaggerated in their pupils when these apply for schools; and so matters go on from bad to worse. The minimum qualifications which a superintendent will accept in each branch ought, therefore, to be most carefully determined and most rigidly adhered to. He is not justifiable in overlooking a failure in essentials because of excellence in something else. We have recently read several letters from school teachers which force upon us the necessity of urging care as to the minimum qualifications. These letters are characterized by a great deal of bad spelling; capitals are used promiscuously; and there is in them neither skill in composition nor proper regard for grammatical principles. Yet the writers not only hold county certificates but are actually in charge of schools. Now a person who does not spell well or use capital letters correctly may be very estimable and very capable in some ways, but ought never to be trusted to teach school, for the same reason that one who cannot make a joint ought not to be trusted to do cabinet work. The examinations of teachers do not serve the purposes for which they are instituted if they do not act as a bar to keep such persons out of teaching. There is a minimum qualification in point of knowledge and training which ought not to be waived; there are some elementary matters so important and closely related to the work that they may not be dispensed with because of excellence in some other respects. The examinations for teachers, like those for the civil service, should be related to the work in view, and so managed as to exclude those not fitted to do this work well; and a person who habitually misspells, misuses capitals, violates grammatical principles, or cannot put together a letter properly, fails in the elements of school work; his example is wholly pernicious to the pupils; and he ought not under any conditions to be granted a certificate that he is fit to teach.

READING CIRCLE work for the year closes with this month — most of it, indeed, was concluded in May, and it has not seemed necessary to publish outlines for the two or three branches which remain to be completed in June. Experience shows some facts regarding the work which it may be well to review: (1.) The work practically is confined to eight months — from October to June. It is hardly possible to get under way before the first of October, and the early summer is not favorable to study. In eight months, then, teachers who are ambitious and persevering may complete one of the courses, and in three years all of them as yet outlined. How desirable it is that all should undertake this work of self-improvement, and hold to it in spite of obstacles, is abundantly evident. (2.) The county superintendent is the most important agent in securing organization and continuous efforts. He ought to be most keenly alive to the necessity for the work; he has acquaintance with the teachers of his county, and opportunities to urge the work upon them and to help in carrying it out; he can make his examinations bear upon it in such ways as shall stimulate the teachers and help them and him. If he wishes really to elevate the character of his

schools no better agency is at present available to him than the Teachers' Reading Circles. In counties where the superintendent has labored continuously for this end real progress has been achieved; in counties where he has been apathetic only a few teachers have attempted anything. (3.) Meetings for discussion and comparisons of views on the branches studied are of very great value. These are indeed, the most profitable kind of teachers' meetings. They may be weekly or monthly, according to circumstances, but they should by all means be organized and kept up. (4.) The plan of organization which works most successfully is that of forming neighborhood circles, under local leaders; and besides. to hold occasional associations—three or four during the season—which bring together teachers from a wide area to compare notes, present papers and discussions, and so on. Next to the county superintendent the local leader is the most important factor. We know of leaders who have rendered service of very great value to the teachers of their circles; who have inspired fresh enthusiasm, shown how to make the work vital, encouraged the wavering and contributed knowledge and skill to the meetings of the circle. The choice of leaders is of great importance, and the superintendent shows his insight and ability as a manager in his selection of them. They should be the natural leaders of the group, persons of force and originality enough to push the work on in spite of obstacles, and of tact enough to secure the hearty co-operation of the members. To lead a circle well is an admirable discipline for a young teacher. It trains him for real leadership in other matters, and will probably be worth to him all the effort and self-denial it may cost. (5.) Organization should be begun early, at the institutes and at the teachers' examinations in the fall. Definite arrangements should be completed for the county before the first of October, and an earnest effort made to push on systematically, accomplishing each month completely the whole of the work outlined for that period. It is to be hoped that a large number of the new superintendents, elected last fall, will feel ready now to identify themselves heartily with this movement, and that those who have had experience will now turn it to the account in work of another year.

THERE is a great defference between looking and seeing. The first is the mere automatic direction of the eyes towards some external object; the second is setting the intellect to playing about the impressions of sense. The eye does not see, but the mind, which takes up the sense-impressions, analyses them, interprets them, compounds them, finds suggestions in them. Unless the mind thus acts the sense-impressions are mere passing shows without significance—there is no *seeing*. Now what we mean by training the senses is really training the mind so that it will go through these operations, and go through them in as profitable and complete a manner as possible. A few minds seem not to need this training. They naturally and originally react, and react accurately, upon sense-impressions. But the majority appear incapable of bringing about a proper reaction until they have been carefully trained to it. An employer complains thus in the *Industrial Gazette:* "There are plenty of men who see a thing, rou-

tine work, done every day, and yet if they were told to do the same thing would ask to be shown how. They learn nothing from observation. They may see lumber piled up every day, or see and even help put up machinery, or load a car with certain material; yet ask one of them to go a head and do by himself just what he has been helping to do, and he will want to be shown how. They are either incapable or indifferent of learning by observation, or even by helping." Clearly in such cases there is no intellectual reaction. The mind takes no distinct note of the order of things done, of the ends to be secured and the means taken to secure them, of the relations of the operations to the purpose in view. Young people often stand and gaze at workmen without learning anything. They are absorbed in the mere motions, in the sense-impressions, and are afterwards able to give no intelligent account of what they have seen, because an intelligent account must take note of the ends secured and of the manner of securing them: they gaze at objects, and when asked regarding them afterwards are able to tell next to nothing about them, because they did not see analytically, so as to discover differences and relations, but only vaguely and generally. Sense-training, or more properly training in the use of the senses, is training to see analytically, to see relations, to discover the adaptation of means to ends, so that the mind will react, and react properly upon sense-impressions. The helplessness of ordinary workmen is a result of their lack of this habit of using their minds. They see as animals see — that is, receive the sense-impression and do nothing with it. The employer goes on to say that when he sets men to work, telling them just what to do, if anything unexpected turns up they are perfectly helpless. They can only come back without accomplishing anything. How should it be otherwise? If they do not observe the relations of means to end, will they be ready at inventing means to overcome an unforeseen difficulty? Mere routine lives result, unintelligent labor, a failure to see the opportunities which life throws in their way. They are ready to join the the great army of the discontented.

We publish on another page Gen. Walker's strictures upon the teaching of arithmetic. They are deserving of attention and study, although we are forced to question whether the critic is not reviewing the practices of the schools when he was a pupil rather then those of the present day. There has been a movement to dispense with logical explanations and "puzzles" which has mostly driven them from the schools in the West, even though they *may* still hold a place in Boston. The criticism needs to be read with much caution, as it may very easily be misunderstood. Gen. Walker is talking about young children, in the elementary schools — children thirteen years of age or under. What is true of them would be inapplicable to older pupils. Gen. Walker and his correspondents recognize that there is a progressive development of mind, and that forcing processes, which attempt to forestall this natural growth, generally result in destroying the tone of the mind. They deaden the natural appetite for knowledge, and mechanicalize the thinking. It would be a false and unfortunate infer-

ence, however, to conclude, as many seem to have done from such discussions, that children have nothing to do with reasoning processes, and are simply to be trained in performing operations. Quite to the contrary. It is a serious error, in teaching arithmetic, to put the pupils to performing merely. The main work of elementary arithmetic is to acquire skill in the fundamental operations and in reduction, with whole numbers and with factions; and skill is acquired by practice in doing. To do these accurately and rapidly is of the first importance. At the same time the doing should intelligent doing. The pupil should be so led on step by step that explanations will be unnecessary, and yet that he will see the relations of his work. If he is not called on for long logical explanations, he is not, on the other hand, left to work mechanically and in the dark. He must see the rightness and reasonableness of what he is doing, and this result will be secured by the right arrangement of the steps in his work. Moreover, he should be disciplined in the practical applications of these processes in such ways as to develop his common sense and right reason. It is against the long, complex, impractical problems that protest is made, and against premature efforts to give full logical explanations of everything, once the hobby of schoolmasters, and always repulsive to intelligent observers of school work. When this shall be understood by teachers and intelligently applied, it will be possible to greatly diminish the time given to arithmetic and at the same time make the work much more effective.

ATTENTION ought to be arrested by another statement in Gen. Walker's address. He says: "True arithmetic is nothing but the art of numbers:" and again: "It may be unhesitatingly asserted that whenever the 'statement' which is preliminary to the performance of a purely arithmetical operation involves a great deal of trouble, time and thought while the mere ciphering which follows is done easily in a minute, as a matter of course, such exercises are not exercises in arithmetic but in logic. To smuggle exercises of this character into instruction given in the name of arithmetic is an abuse." Why? Does this mean simply that Gen. Walker would have us go on creating new branches of study by distinguishing and dividing with scholastic subtlety? This is now the bane of elementary training, that we have distinguished and divided so much, making our teaching an affair of shreds and patches, instead of a body of coherent knowledge. Does it mean, on the other hand, that logic "is a monster of such frightful mien as to be hated needs but to be seen"? We have little hesitation in affirming, on the other hand, that probably the gravest defect in our public school work is its neglect of logical training. It is safe to affirm that of the graduates from our high schools this summer not four in one hundred can take a simple argumentative discourse of a thousand words and determine correctly the point to be proved and the several arguments adduced in support of it. Not one half of them, we venture to say, can read an account of a scientific investigation and correctly discriminate the observations and the inferences from them. We would not have logic made a branch of study in our public schools, but we

would have the branches now studied in them made instruments for some elementary logical training. Pupils should be taught to think clearly, and they do not think clearly, however perfectly they may recite the text of some book, or perform the operations of arithmetic, if they cannot make the distinctions above indicated. We would have the reading lesson, and the lesson in physics, and the lesson in arithmetic used to develop the power and habit of such discrimination. In the class of problems condemned the pupil is put upon discovering for himself the logical consequences of certain statements. He is not required to analyze another's argument but to construct one of his own. He must discriminate what is required, and the conditions given from which it is to be found. Moreover, he must see the significance of the relations in his problem. Practical life is full of such problems—given certain elements what follows? How can they be turned to account? The logical training of the "bastard" (?) arithmetic is, therefore, of great value. An arithmetic which "is nothing but the art of numbers" is a very weak and meagre affair in comparison. We agree, however, with the opinion that the time given to arithmetic in our schools might, with great advantage, be considerably abridged, and that it is possible to press this logical praxis irrationally.

IN THE SCHOOL ROOM.

ARITHMETIC IN PUBLIC SCHOOLS.

At a late meeting of the Boston School Commissioners, Gen. Francis A. Walker delivered an address which has attracted much attention because of its criticisms upon the manner of teaching of Arithmetic. We give below the most important portion of the address bearing upon this subject:

The charge I make against the existing course of study is, that it is largely made up not of exercises in arithmetic at all, or pincipally, but of exercises in logic; and secondly, that as exercises in logic, these are either useless or mischievous. The class of exercises that are here in mind will be easily apprehended. They are those where an example, or so called practical problem, is given in figures and words which are to be reduced to the form of figures and algebraic signs; and thereupon the performance of the indicated numerical operations will yield the required result. It would, perhaps, be going too far to say that such examples should in no case be given; but it may be unhesitatingly asserted that wherever the "statement" which is preliminary to the performance of purely arithmetical operations involves a great deal of trouble, time and thought, while the mere ciphering which follows is done easily in a minute, as a matter of course, such exercises are not exercises in arithmetic, but in logic. Secondly, if such exercises of any considerable degree of difficulty, are to be set at all for the pupils in our public schools, they should be prescribed as exercises in logic, or the art of reasoning; they should be taken from books pre-

pared by eminent teachers of the science of mind who are qualified to decide as to the degree of difficulty in logical exercises which is suitable to the child of this or that age; and the exercises so prescribed should be conducted by persons themselves trained and qualified to teach the art of reasoning.

To smuggle exercises of this character into instruction given in the name of arithmetic, is an abuse. By it has been created a bastard arithmetic which fails to perform the true function of that study in our public schools—namely, to produce accuracy and a reasonable degree of facility in numerical operations,—while wasting the time of the pupils, perplexing their minds, worrying their tempers, rasping their nerves, and, in case of total or partial failure, unnecessarily and unrighteously shocking and imparing their self-respect and scholarly ambition.

I desire to challenge peremptorily the whole policy of giving out exercises of any appreciable degree of logical difficulty to children of this age. Thoroughly convinced that such a practice involves bad psychology, bad physiology and bad pedagogics, I was yet desirous of bringing to my support the authority of masters in mental science, and, with this view, addressed communications to Prof. William James, professor of psychology in Harvard University; Prof. George H. Howison, professor of philosophy in the University of California; Prof. G. Stanley Hall, professor of pedagogics in the Johns Hopkins University, and Dr. Noah Porter, late president of Yale College, and still professor of mental and moral science in that institution. The purport of these communications was to inquire, first, whether the faculty of logical analysis is not one which, in the case of the vast majority of children, normally develops at a later period than that within our present consideration; secondly, whether, if this be so, there is any pedagogical advantage in attempting to "pry up" this faculty and bring it prematurely into consciousness and exercise, instead of devoting the time and strength of young pupils to the formation of a habit of observation, to the cultivation of the powers of preception, to practice in the interpretation of personally observed phenomena, to the acquisition of elementary information, and to the development, in a reasonable degree, of strength and clearness in the memory. The class of exercises to which exception has been taken were illustrated either by sufficient description or by actual examples. To these communications the most courteous replies have been received. The essential parts are here submitted, without apology for their length, on account of the great interest of the subject treated and the high and commanding reputation of the authors.

PROF. JAMES writes: "The elaborate combinations of arithmetical data of which you write are certainly given to children before their brains are very hot for them; while I imagine, on the contrary, the mere operations of arithmetic are a comparatively congenial exercise. It is, as you say, in the association of concretes that the child's mind takes most delight. Working out results by rule of thumb, learning to name things when they see them, drawing maps, learning languages, seem to me the most appropriate activities for children under thirteen

to be engaged in. Anecdotical history (without political ideas) might be added. I feel pretty confident that no man will be the worse analyst or reasoner or mathematician at twenty for lying fallow in these respects during his entire childhood."

PROF. S. HALL writes: "If I correctly understand your position, I most emphatically agree with it. The purer the mathematics for boys of from ten to fourteen years of age the better, it seems to me. Many of our arithmetics presuppose algebra and geometry — i. e., in the latter part give examples that can be done easily by those methods, but which require students to go through long and tedious processes, which algebra and geometry were meant to short-circuit. Problems in brokerage, surveying of land, architecture, custom house practices, etc., etc., are taught just as in the old Hindoo mathematics a taste for poetry, and in mediæval arithmetics moral and religious maxims, and even systems, as well as historical information, were inculcated in the form of 'sum.' Has modern business really any more place at that stage? . . . American teachers seem to me to have spun the simple and immediate relations and properties of numbers over with pedantic difficulties. The four rules, fractions, factoring, decimals, proportion, per cent., and roots, is not this all that is essential? The best European text-books I know do only this, and are in the smaller compass, for they look only at facility in pure number relations which is hindered by the irrelevant material publishers and bad teachers use as padding."

PROF. HOWISON writes: "I understand your question to bear simply on the point whether I consider the class of arithmetical exercises, to which you refer, and in which the work turns almost entirely on the logical relations of the numbers given in each example, to be a wholesome regimen for pupils in the common schools of ages from eleven to thirteen years. To this I reply, first, that on general principles such exercises, in reasoning upon the combinative relations of numbers, or numbered objects, ought to play a very subordinate part in the elementary period of instruction in arithmetic. But nevertheless, secondly, as the very life of arithmetical power turns on ability to make the logical synthesis involved in the latter kind of work (you see I do not reckon them mere analyses, as is usually done), I think some exercises of this sort should go along with the other simpler and more natural kind, and that they should go from the earliest practicable date, almost from the beginning. But the combinative reasoning should be adjusted in the most careful and considerate manner; with a reference, that is, to the degree of difficulty with which the mind of a child is able at each date to cope, without confusion and without sense of strain. So, thirdly, I should say that the question you raise concerns mainly, a matter of more or less — a matter of degree. It is not that the class of exercises to which you refer are in kind and necessity wrong, but that the complexity and difficulty of those actually given are so often out of all proportion to the healthy capacities of children at the age involved. . . . My own experience and opinion of many details in the arithmetics made for boys and girls of the age to which you refer are quite like yours. And my experience and my theories, founded

on my professional duties and practice, have alike made it with me a matter of settled conviction that not only in mathematical, but in all elementary teaching, though in elementary mathematical teaching pre-eminently, the first thing is to get the pupil perfectly familiar with and as nearly as possible infallibly accurate in fundamental facts and operations. . . . I believe our current practice in this reference has for some years—say the last 30—been going seriously wrong. The reaction from the exaggerated rote work of the preceding period has driven us into the error of the opposite extreme.

"The attenuated thread into which grammar school instruction is now 'long drawn out' should appear a patent absurdity to every thinking mind. Particularly is this absurdity manifest in the fact that we spend eight or nine years in nominally teaching arithmetic, when we ought to be able, surely, to accomplish all that is essential in three, or at the utmost in four."

PRESIDENT PORTER writes: "I am entirely with you in the opinion that the questions which you send me are unfit for pupils of fourteen or fifteen years, unless they have been subjected to a special training; and that, to subject persons of that age to such a training, would, ordinarily, do them more harm than good. . . . Nothing is so admirable, in its time and place, as the pure mathematics in every form. When these are properly taught, i. e., when they have trained the mind to sharp analysis and patient synthesis, by the use of numbers and geometric forms, they prepare the way for the higher forms of logical analysis and synthesis, and, last of all, for invention which is presupposed in the problems to which you reasonably object."

THE STUDY OF LITERATURE.

The following extracts from an address by Prof. John Morley on "The Study of English Literature" are so suggestive as to the character and value of this branch that they will repay careful study by any teacher capable of appreciating them. The address was delivered before the London Society for the Extension of University Teaching:

I. CULTURE AND PRACTICAL POWER.

I am well aware that there is an apprehension that the present extraordinary zeal for education in all its forms may create an unwillingness to pursue honest handicrafts, and that everybody will want to follow some so-called genteel occupation and be a clerk. Years ago in the United States I heard something of the same kind. All I can say is that this tendency, if it exists, will right itself. At any rate, the spread of so mischievous a notion as that knowledge and learning ought not to be within the the reach of handicraftsmen is an error for for which literary education is in no way responsible. There is a well-known passage in which Pericles described the character of the great community in which he lived: "We at Athens are lovers of the beautiful, yet simple in our tastes, and we cultivate the mind without loss of manliness." But remember

that Athenian society rested, after all upon the basis of slavery, and that Athenian citizens were able to pursue their love of the beautiful and their simplicity of taste, and to cultivate their minds without loss of manliness, because the drudgery of the hard work and service of society was performed by those who had no share in all these good things. Matters are happily different now. We are all more or less upon a level, and our object, which, in my opinion, raises us infinitely above the Athenian level, is to bring the Periclean ideas of beauty, simplicity, and cultivation of the mind within the reach of those who do all the drudgery, and the service, and the hard work of the world. [Applause.] And it can be done. Do not let us be afraid of being called dreamers. It can be done without in the least impairing the skill of our handicraftsmen, without injuring manliness, without blunting or numbing the practical energies of our people. I know it is said that the more you are a student of literature the less qualified are you to take part in practical affairs. You run the risk of being labeled a dreamer or theorist. But after all, if we take the very highest form of practical energy, the governing of the country, I venture to say that even in the present government, from the prime minister downward, there are half a dozen gentlemen perfectly capable of earning their bread as men of letters. In the late goverment, besides the then prime minister—[applause]—there were three men of letters, and I have never heard that they were greater simpletons than their neighbors. [Laughter.] There is a commission now at work upon a very abstruse and important subject in which Mr. Goschen takes a great interest, and I am told that no one shows more acuteness, no one more appreciation of the difficulties that have to be met, of the arguments brought forward, and of the practical ends which it is desirable to attain than the chairman of the committee, who is not what is commonly called a practical man, but a man of study, and thought and literature.

II. THE NEGLECT OF CULTURE.

I have made some inquiries in the great popular centers of industry, in the north of Scotland, as to the popularity of literature as a subject of teaching, and I find very much what I expected. The professors in colleges all report very much the same story. There is a disinclination to study literature for its own sake, and a disinclination to study anything that does not seem to have a visible and direct use bearing upon the real work of life. The nearest approach to a taste for literature is a certain demand for the study of history, with a little flavor of contemporary politics. I can only profess to be very much surprised at this. Mr. Goschen at Manchester two or three years ago said there were three motives which might induce people to seek higher education and higher learning. The first was to improve knowledge for bread-winning purposes, and from that point of view science would be most likely to feed the classes; secondly, to improve one's knowledge of political economy and history, and of facts bearing upon the actual political work and life of the day; and thirdly—I am quite content to take Mr. Goschen's definition—a desire for knowledge as a luxury

to brighten life and kindle thought. I am very much afraid that, in the ordinary temper of our people, the last of these motives in their opinion savors a little of self-indulgence and other objectionable qualities. There is a great stir in the region of physical science. That is, I think, for long likely to remain the chief and most important field of intellectual activity and thought. The great Dr. Arnold once said that if he had to choose he would rather a man believed the sun went around the earth than that he should be entirely deficient in the knowledge of beauty, of poetry, and of moral truth. [Applause.] I, for one, am not prepared to admit the enormous pretensions sometimes made for physical science as being the end of all education. There is a great stir also made on behalf of technical and commercial education. The special needs of our time and country compel us to pay special attention to these. Knowledge is business, and we shall never hold our industrial predominance, and all that hangs upon that predominance, unless we push on scientific, commercial, and technical education with all our might. But there is another kind of knowledge. It is the cultivation of the sympathies and of the imagination, and the quickening of the moral sensibilities and the enlargement of moral vision. That, as I take it, is the business and function of literature. Literature alone will not make a good citizen, it alone will not make a good man. History affords too many proofs that scholarship and learning do not purge men of acrimony, vanity, arrogance, and a monstrous tenacity about trifles.

III. WHAT THE STUDY OF LITERATURE IS.

I frankly admit that the taste, habit, and power of reading with reflection, apprehension, and memory, all alert and awake, do not come at once to the natural man. No more do many other sovereign virtues. What I do mean to submit is that it requires no preterhuman force or strength of will in man or woman, unless the household circumstances are unusually vexatious and unfavorable, to get half an hour even in a busy day for good and instructive reading. In half an hour you can read fifteen or twenty pages of Burke, or one of Wordsworth's masterpieces, like the lines on Tintern, or more than half a book of the "Illiad" or the "Æneid." Try for yourselves what you can read in half an hour, and multiply it by 365, and consider what treasures of thought you have laid up for the contemplation of the inward eye by the end of the year, and what happiness, fortitude, and wisdom they will have given you for a lifetime. Most books worth reading once are worth reading twice, and the masterpieces of literature are worth reading a thousand times. We are often asked whether it is best to study subjects, or authors, or books. I think this is like most of the stock questions with which the perverse ingenuity of mankind torments itself. [Laughter.] It seems to me an entirely idle question; but if it is worth answering my answer would be that it is sometimes best to study authors, sometimes best to study books, and sometimes best to study subjects. My notion of the student of literature is one who explores through books the strange vagaries of human reason, the impulses of the human heart, the chances and changes that

have overtaken our ideals of virtue and happiness, of conduct and manners, the shifting fortunes of great conceptions of truth and virtue. Poets, dramatists, humorists, satirists, the masters of fiction, the great preachers, the character writers, the great political orators, are all literature in so far as they teach us to know man and life. This is what makes literature, rightly selected and rightly studied, a proper instrument for the right training of the imagination, of sympathy, and of general and varied moral sensibility.

IV. WHAT ITS PROPER RESULTS ARE.

I think we are now approaching a period when a quiet style will prevail in literature. We have had three giants in our day who have exercised the rights of giants. One of them I am glad to say is still among us. One was Carlyle, the other Macaulay, and the third Ruskin. [Applause.] As I say, I believe we are in for quieter styles. Truth is quiet. In the present and in the times to come which threaten deep political, economical, and social controversies, that which is needed is that people shall weigh and consider. ["Hear!" "Hear!"] I hope I have make it clear that we conceive the end of education, on its literary side, is to make a man, and not a cyclopedist, a citizen and not a living book of elegant extracts. ["Hear!" "Hear!"] Literature does not end with a knowledge of form, with finding a key to rhythm, to the stanza, the change from the involved and sonorous period of the seventeenth century to the staccato of the nineteenth and all the rest of the technicalities of scholasticism. They are good to know, but they are not ends in themselves. "An intelligent man," says Plato, "will prize those studies which result in his soul getting soberness, righteousness, and wisdom, and will less value the others." In other words, literature is one of the instruments for forming character, for giving us men armed with reason, braced by knowledge, clothed with steadfastness, and inspired by that public spirit and public virtue of which is has been truly said that it is the brightest ornament of the mind of man. That which matters most to us both for happiness and duty is that we should habitually live with wise thoughts and right feelings, and it is because literature helps us more than most studies to that most blessed companionship of wise thoughts and right feelings that I have taken the opportunity of earnestly commending it to your interest and care. [Cheers.]

SOME TEACHING DEVICES.

IN READING if there is a very dull, poor reader in the class, I would select a paragraph as interesting as any in the lesson, though not too long, and before time for recitation I would say to him in a quiet way, that he might prepare to read that one paragraph, reading it carefully until he is *sure* he can read it well before the class. Then if there be any improvement, try to encourage him by noticing it; perhaps encouragement is what he needs.

I usually have a portion of the reading lesson or definitions copied by pupils on slates or paper, and brought to the class for correction. Sometimes I ap-

point two or three to correct all the work; then again I have the members of the class exchange slates and correct each other's work, care being taken to correct all errors in spelling, punctuation, and capital letters.

An interesting mode of recitation to illustrate inflection, consists in arranging a series of sounds, letters, figures, or words in the form of questions and answers, and allowing one portion of the class to put the questions and the other to give the answers.

IN ARITHMETIC.—I noticed once, in a primary school, where the number-work was much too abstract, a little girl who did not seem to get on with her arithmetic as well as she was expected to do. One day some questions of money was brought up as a sort of a diversion; she was ready enough at this, and far better than any of the others in the class. I found that she was quite familiar with all the parts of the dollar, and could tell what change to give in almost every case I gave her. I asked her how she learned so much about it, and she told me that her father sometimes let her help him sell in the store. She was learning arithmetic in the store better than in school.

We will place ten apples before a class that is beginning fractions. We shall suppose that, from the beginning of their instruction in numbers, they have been taught to find ½, ¼, etc.

How many apples have we here? "Ten."

How many times can you take two apples out of these ten? "Five times."

Then what is a fifth of ten apples? "Two apples."

Now one of you may give me three fifths of ten apples. How many? "Six apples."

Now put each fifth by itself. I want half of your three fifths; can you give it to me? Some one will discover that one of the groups of the two must be divided to get this, and will give me three apples.

What part of ten apples is one apple? "One tenth." Three apples? "Three tenths."

Now we will write what we have done. Tell me what you did. I gave you half of three fifths, and it was how many apples? "Three apples."

And three apples is—? "Three tenths of ten apples."

Write it all in figures. "½ of 3-5ths of 10 apples = 3 apples = 3-10ths of 10 apples."

The teacher, who has the room next to mine, has a happy device for slate work. She has bought at a printer's, some card-board, that is usually designed for tickets of admission to entertainments. This card-board she has cut into pieces; on each, she has put several examples. They are numbered and the answers written in a little book. These cards are designed to keep the pupils busy, when their regular lessons are learned. In another book an account is kept of the number of cards each pupil has finished, and a reward is given for good work on these examples.

HOME MADE CHARTS.—These may be on heavy manilla paper, lettered either

with stencils, which, in turn, may be made by selecting letters of the right size from advertisements and cutting out with a sharp knife, or with a pen or brush in the ordinary marking style of letters, mounting in any form of case desired.

Reading charts. One especially desirable is the first twenty-five words of the first reader arranged "hit or miss" to be used as a drill for quick pronunciation, or in original sentence making, until the words become perfectly familiar to the class. Add any others that may be desired.

Geographical cards are easily made. One very desirable is to arrange the states and territories in order of size, using rectangles to represent them and brought in comparison with similar figures drawn to scale, representing population. Governments, etc., may be likewise compared. Pictures to illustrate the peculiarities of certain states or sections; outline maps, either punctured to use as transfer maps to the board, or erasable, or plain.

Arithmetical charts. Addition tables which may be used in many ways. Outlines showing the relations of fractions, compound numbers, or the reasons that govern in computing the areas of the different geometrical figures.

Historical and grammatical charts can be easily made to show the principles that govern.

Besides the charts, we could suggest a set of measures which can be easily made in many ways. A pair of balances and enough weights to illustrate and make familiar the different systems. A clock dial with movable hands. A ball to illustrate the earth's motions. A set of card-board figures to show the relation of the triangle to all other figures.

Cannot some of our teachers do some thing of this kind and bring the result to the spring institute or associations to compare with others? — *Marshall Messenger.*

LANGUAGE EXERCISES.

1. Correct any errors in the following:

I won't have another opportunity of seeing it.
Were either of you meddling with my desk?
What did you say was the capital of Belgium?
He could not have known that it was she that done it.
I thought I would have had time to have learned it in school.
Nobody but the Brown's knew about it.
I wish it wasn't so dark.
I don't like to go without I hear from him.
I believe it is just as cold if not colder than yesterday.
The state of spiritual folly is one of the most universal evils in the world.
I have only heard from him twice since he has moved to Toronto.
What makes you act so silly?

2. Supply words of which the following are meanings:

one who cultivates the soil.

a person who carries parcels, etc., for hire.
a person skilled in healing diseases.
a person skilled in healing bodily injuries.
one who is an eloquent speaker.
one skillful in painting, sculpture, or music.
a writer of books.
one who performs on the stage.
one who studies about plants.
one who studies about animals.
one who studies about the stars.
one who studies the formation of the earth.
one who studies fossil remains.
a cultivator of flowers.
a man who sells fruit.
one who takes care of horses.
one who draws plans for buildings.
a mechanic who builds mills.
one who drives a team.
one who has charge of money in banks.
one who makes barrels.
one who constructs or manages engines.
one who measures land.
one who practises athletic exercises.
one who writes history
a soldier armed with a breastplate.
one who cures diseases of the teeth.
one who sets printers' type.
an officer of the peace.
a female who tends sheep.

3. Write sentences showing the different uses of the following words, each of which has more than one meaning:

fall	pile	mill	kind	dog	ball
palm	link	patient	ground	line	brake
lap	down	last	watch	cord	pupil
frog	prune	rider	yard	corn	tick
peck	mean	band	post	page	range
peer	tag	pen	cot	pine	mail
lean	fair	mine	ounce	hide	letter
perch	pound	fare	toll	pike	race
light	season	line	sole	arms	swallow.
will	kite	well			

4. Recast each of the following sentences in as many ways as possible without changing its meaning:

(1) Gold is the most precious of metals.
(2) Corn does not thrive in cold climates.
(3) Music is now studied by nearly everybody.

(4) Pride costs us more than hunger or cold.

(5) The horse is the most useful animal.

5. Rewrite the following sentences, contracting the phrases in italics into equivalent words:

(1) *To be weak* is misery.

(2) He was killed *in an instant.*

(3) He opposed us *with violence.*

(4) *In this place* will I remain.

(5) *In a little while* the work will be completed.

6. Rewrite the following sentences, expanding the phrases in italics into equiv alent clauses:

(1) I bought a piano *to please my wife.*

(2) I could not read by the light *of the moon.*

(3) *To convince you,* I will tell you the whole story.

(4) *On receiving my pay* I departed.

(5) *To be his favorite pupil* was my delight.

7. Combine into not more than four sentences: Two men were walking together. A bear suddenly met them. One climbed quickly into a tree. He hid in the branches. The other was unable to escape. He saw this. He fell flat on the ground. The bear came up. It smelled him all over. He held his breath. He pretended to be dead. The bear soon left him. Bears will not touch a dead body. So people say.

8. Expand the following sentence into as many simple sentences as there are verbs in it: Shortly after finishing the business on which he had come he received an invitation to dinner, and, accepting it, found himself in company with many distinguished guests, among whom he preserved a modest demeanor, taking but little part in the conversation.

OUR DRAWER.

THE WISCONSIN SUMMER SCHOOLS.

EDITOR JOURNAL: Permit me through your columns to call the attention of the teachers of the State who are ambitious to do better and more remunerative work, to the opportunities vouchsafed by the Wisconsin Summer School for Teachers. Holding its session as it does when all the teachers are free, it offers the advantages of a high grade professional school to the men and women who are bent on teaching better schools. Contact with such a faculty as has been secured, and with such persons as have already announced their intentions to attend will alone repay for all expenditure and money.

But leaving this out of account, as well as the real teaching power to be gained, there is still a strong business reason why very many should attend. Hundreds of teachers of our State spend considerable money each year in the en-

deavor to find better positions for which they feel themselves fitted. Now I can think of no better way to accomplish such an end than to attend this school. The great majority of the wide awake superintendents of city schools throughout the State will visit the school for the purpose of finding teachers for present and prospective vacancies. On the faculty are three men who, owing to their associations, have many calls for principals and teachers brought before them yearly. Further many similar calls come to the department of public instruction each year, and what better way is there to put a teacher in the line of such promotion than by securing his enrollment as an earnest working member of our Summer School?

Questions have reached us as to what use is to be made of the income from the school. If the school should be self-supporting—as it will be with one hundred names on its rolls—the management will be satisfied. Should further income accrue it will be devoted to enlarging the course of study and securing additions to the faculty. Very truly,

C. H. KEYES,
Ch'n Com. on Summer Schools.

ENGLISH LITERATURE IN THE SCHOOLS.

A correspondent writes: "I wish you would give us something about English Literature in the public schools." For the purposes to be secured—the main purpose to be secured—we refer the writer to the admirable extracts from John Morley's address published elsewhere in this number. In addition we avail ourselves of the request, which opens a very extensive field of inquiry to touch upon one important question, what general plan of literature study should be followed in the schools? On the whole two plans have prevailed extensively. One aims at the mastery of a manual of English Literature. Now the manuals are essentially history and criticism. They aim to give an outline of the whole subject, tracing the growth of the literature and perhaps its relation to the development of the English people, and succinctly presenting the accepted critical judgment upon the works of the foremost writers. This plan is open to two serious criticisms; it puts the pupil to learning *about* great authors instead of studying the authors themselves; and it loads him with generalizations and opinions which he is not ready to test or appreciate. The second plan proposes to study the authors themselves. Two great obstacles at once present themselves: (1) The field is vast, and (2) the pupils are immature and their critical powers undeveloped. If an attempt is made to develop their critical powers very little is read,—and that knowledge of literature which should serve to guide future reading and to form taste, is not acquired; if, on the other hand, the pupil is urged to read enough so as to know for himself something of the leading authors his work must be hasty and superficial. In such a case what is the best course for the majority of pupils? In our judgment both the plans

must be pursued, but in a rational way, so as to secure well defined results. Some brief manual, like Prof. Backus' revised edition of Shaw's English Literature should be studied for the first purpose, but broadly, with special topics assigned for essays by individual members of the class. Stress should be laid upon the few more distinguished authors, and upon the general development of literature; and especially should the more modern periods, and the writers who still influence thought receive attention. This instruction must not degenerate into the mere learning of lists and dates and critical formulæ. The pupils must be encouraged and helped to obtain for themselves such direct knowledge of the great works of literature as they are capable of acquiring, and to make and express freely their own opinions. In addition to this a class study of some well chosen works, or selections, directed vigorously towards developing their appreciation of literary form, and their admiration for lofty thought, ought to be undertaken. It requires considerable wisdom so to direct this work that it should escape the pitfalls of antiquarianism, curious but profitless verbal criticisms, and the dry-as-dust nonsense of learned commentators, and to make it really keen, inspiring and suggestive, so as to help the pupil to get into the very presence of the master-spirit — which ought to be the great aim of the instruction.

MATHEMATICAL SECTION.

[We regret that, owing to unavoidable delays, it is necessary to defer to next month an admirable paper on "Logic for Little Folks" prepared for this department.]

PROBLEMS.

J. M. Turner sends the following in answer to the problem No. 2, in the May JOURNAL:

"2240 lbs. = 1 long ton;
2000 lbs. = 1 short ton;

therefore, $\frac{2000}{2240}\left(\frac{25}{28}\right)$ long ton sells for 100 per cent. of cost, and $\frac{28}{28}$ would sell for $\frac{28}{25}$ of 100 per cent., or 112 per cent. of cost. Hence rate of profit is 112 per cent. — 100 per cent. or 12 per cent."

Correct answers were also received from B. L. Bohn, John A. Sweany, C. G. Wolcock, E. A. Belda, Charles Irle, Jr.

1. What is the greatest cube that can be cut from a globe three feet in diameter? Give complete solution. W.

2. To compute the distance to which an object can be seen on a level surface: To the hight of the observer's eye in feet, add its half and extract the square root. The result gives the required distance in miles. Example: The eyes of an observer are 6 ft. above the level of the sea. How far can he see an object

on the surface of the water? $\sqrt{6+3=3}$. *Ans.* 3 miles. The above ru takes no account of the variation caused by the refraction of light, but asi from this gives nearly accurate results. Who will give a mathematical demo stration of it, and explain how it is that we start with feet and obtain a result miles? S. Y. GILLAN.

Correspondence relating to this section should be addressed to the und signed.

T. B. PRAY.

WHITEWATER, WIS.

OUR BOOK TABLE.

THE EDUCATION REPORT.

The annual report of the Commissioner of Education is always a very valu ble document. It serves the purpose for which it was originated by making comprehensive study of educational tendencies and results, not only in the d ferent States of this Union, which are presented with considerable fullness detail, but also in foreign countries. The work of the bureau in disseminati educational information, besides the issuing of the annual reports, is shown fa ly by the long list of publications, including special reports, bulletins, circula of information, etc., which fills between three and four pages of this volum These are becoming so numerous that they ought now to be so classified as bring together into separate volumes those relating to cognate matters, and to bound. Few Americans are careful of pamphlets. They are examined hast and sent to the store-room or the waste-basket. When such papers are bou they are not only more generally preserved but are much more frequently co sulted because so much more accessible.

Of the many important topics discussed in this report we can notice but tw or three, and these very briefly. The commissioner is of the opinion that the majority of the States the common school system suffers from defective a ministration. "This arises chiefly from the multiplicity of school districts a of independent local authorities, with the inevitable result of small schools, l standards, low wages for teachers, poor supervision or none at all, and waste funds." In another place we find the following statement regarding Wiscons which reads like an illustrative comment on the above: "An increase appe in the average monthly pay of teachers in the cities, with a decrease in the p of those employed in the counties." The commissioner continues: "The are evils which cannot be eradicated until the petty school sovereignties a abandoned, and local interest in public education is manifested in the united a tion of communities and formulated in laws binding alike upon all. Where this united action has been secured the schools are flourishing. Wherever it wanting they are in a bad condition. These declarations are confirmed by

ports from every State in the Union." It would be difficult to present a stronger argument than this in favor of the substitution of the township for the district system of organization; and the details given in the report fully justify the statement.

A topic closely related to this is the supervision of country schools and the granting of teachers' certificates. The demand has arisen in several States that those who examine teachers should, in all cases, be persons who have themselves passed suitable tests; and, further, that for the varying tests now used in different counties at teachers' examinations should be substituted uniform sets of questions issued from the office of the State Superintendent. The strong movement for this reform made in New York is familiar to our readers.

Regarding industrial education the commissioner calls attention to the important difference of view which has developed among its advocates. A large class mean by the term training for industrial pursuits, while another class mean manual training as a means of intellectual development. As Felix Adler puts the case, "One party seeks to make the mass of mankind more machine-like than they already are, though with the proviso that they should be more perfect machines; the other party seeks rather to elevate the masses, more completely to develop the humanity of the young, and looks upon technical and art education in the school as a novel and admirable means for achieving this result." Quite an extended account is given of Prof. Adler's Workingman's School, of New York City, in which the latter views prevail. The experiments at engrafting manual training on to the public school instruction also receive considerable attention, and several of them are described in detail. So far the only exercise of this kind that it has been found practicable to bring within the reach of entire school populations are drawing, clay modeling, and sewing. Sewing introduced into the grammar grades of Boston in 1876 can no longer be regarded as an experiment in that city. Every year affords increased evidence of the great value of the instruction, and shows a slight increase in the number of cities following the example of Boston. Of the 276 cities enumerated in Table II., 73 report special teachers of drawing; it is also included in the course of instruction in many other cities which make no special provision for the instruction. In a number of cities the instruction in this branch is of a high order, and its beneficial effects are felt in many branches of industry; but as a rule provision for this important art is altogether too meager and the course of instruction exceedingly defective, while modeling and design are largely neglected. The result of all experience bearing upon the subject and the testimony of all competent judges justify the assertion that drawing and modeling ought to be included in all elementary training, and the need of adequate provision for this work cannot be too persistently nor too urgently forced upon the attention of legislators and school authorities. In several cities the influence of the public schools has been thrown on the side of industrial work executed by the pupils outside of school hours, and independently of school instruction. This has been done by arranging for exhibitions of such work and by the distribution of prizes for the

same. Instruction in cooking has so far been almost confined to the Boston schools, but its success here will probably lead to its trial elsewhere.

Our space will not admit of reference to other topics but we commend to the attention of our readers the remarks upon high schools and secondary education, and upon school hygiene. This is the last report (1884–5) from Dr. Eaton. It is to be hoped that the new commissioner will signalize his administration by issuing these reports more promptly, as the value of the information which they contain is greatly increased when it is laid before the public as promptly as possible after its collection.

—PRINCIPLES OF EDUCATION PRACTICALLY APPLIED, by J. M. Greenwood, (D. Appleton & Co.; 192 pp.) is a manual for young teachers, by the Superintendent of Schools in Kansas City. It discusses school management, recitations, questioning, and the teaching of reading, language and penmanship, geography, history and arithmetic. The leading ideas about teaching are excellent, and there are many practical suggestions in it which would aid beginners. We question whether the title represents the work truly. Principles of education are not wrought out in it—only a few are even stated, and these are not related to each other so as to constitute a coherent system, nor is their application traced in the subsequent chapters on teaching. If principles are to be of any value to a young teacher clear and explicit illustrations of their applications are indispensable, so that he may not fail to trace the connection, and may form a habit of guiding himself by them. This is what we look for but fail to find in the present work. Moreover, the effort to be brief has resulted in making many excellent directions sterile because they lack explicitness. As an example of what we mean take the following—we have noted many like it in the volume: "Again, teachers should see to it that children do not sit with their bodies bent forward and downward, nor with the eyes too close to their books, nor hold their books at too obtuse angles." True, but what the novice needs from such a treatise as this is help to understand what "too close" and "too obtuse" mean, and what positions are correct and why.

—FIRST YEAR IN LATIN, by George Stuart, (Eldredge & Bro.; 272 pp.; 95c.) is the introductory book of a very admirable series of school books in the Latin classics. The plan is the usual one followed at present,—portions of grammar with vocabulary and exercises constituting a lesson. The arrangement of the work is excellent and the author believes that the whole of it, including some ten pages from Cæsar's Commentaries, may easily be accomplished in a single year.

—TEN GREAT EVENTS IN HISTORY, compiled and arranged by James Johonnot (D. Appleton & Co.; 264 pp.) might almost be styled "Great Struggles for Liberty." The ten events treated of are the defense of Greek Freedom—the crusades, the Swiss fight for liberty, Bruce and Bannockburn, the discovery of the new world, the defense of freedom on the Dutch dikes, the overthrow of the invincible armada, the story of the pilgrim fathers, the British conquest of

India, and the story of Lexington and Bunker Hill. These subjects are well selected as centers of attachment for the subsequent systematic study of history, and are sure to enlist the hearty interest of young readers. In short this is a most admirable book for boys and girls ten to twelve years of age.

—THE WILLIAM HENRY LETTERS, by Abby Morton Diaz, (Interstate Publishing Co.; 257 pp.; 80c.) give a very lively and realistic picture of happy-go-lucky boy life at school. The hero writes to his kind old grandmother letters full of fun, plans, sketches, wishes—the thoughts of a boy,—and illustrates them often with his own drawings, which, if not so artistic and full of feeling as those of Thackeray, yet do not lack spirit and truth. Indeed, the book is fresh and delightful, and merits the popularity it has attained.

—FIELD, WOOD AND MEADOW RAMBLES, by Amanda B. Harris, (Interstate Publishing Co.; $1.00,) is a book of bird studies. Fourteen well-known birds of our northern States, are found and observed in their native haunts; their nests are discovered despite the cunning with which they are hidden from curious eyes; some of their ways are described, and the woods and meadows and summer weather lend their interest also to the narrative. The book is illustrated with several full page engravings.

—A PRIMER OF BOTANY, by Mrs. A. A. Knight (Ginn & Co.; 115 pp.) shows, as it seems to us, a tendency to crowd knowledge prematurely upon the child. It has about it, the marks of a book for children of six to eight years of age, such as "write a statement about (1) leaves that have been in the light many hours; (2) leaves that have grown in the dark, etc." But on the same page we meet this: "Substances are matters which occupy space. Write five statements about the substances. In each statement underline the words which mean plant food." Poor babies! Will they not hereafter demand that such teachers give them back the simple natural childhood which was stolen from them by teaching of this sort?. We do not hesitate to say that a child who needs work of the first sort ought to have nothing whatever to do with protoplasm, plant tissue, boundary systems, and so on. Let him study plants if you please, but in the order in which the knowledge of botany was developed historically.

—SUGGESTIVE LESSONS IN LANGUAGE AND READING for Primary Schools, by Anna B. Badlam, (D. C. Heath & Co.; 279 pp.; $1.65) comes of an experienced and skillful teacher, who has put into it the results of her school room work and observation. It is essentially suggestive. The author has not wished any teacher to follow every detail of her plan in a wooden way, but expects her to modify and adapt the materials according to circumstances. Here is a plan of work, wrought out in details, beginning with oral lessons designed to increase the pupil's vocabulary and help him to appreciate the value of the words he uses and hears. The results of such work are sufficiently shown by the twenty or more sample stories, which are printed just as they were written by the children in primary classes. The second part presents suggestions and materials for blackboard reading and word building. Any active and progressive primary teacher will find the work of great practical assistance to her.

—BACON'S NEW GERMAN LEITFADEN, (Clark & Maynard, N. Y.; 272 pp.; $1.50) follows the natural or conversational method of teaching German, but combines with it the study of the grammar in such a manner that the pupil forms accurate and critical habits. The book consists of two parts. The first is a conversation grammar, arranged in single page lessons, each treating a single subject and composed of a set of grammatical forms, a reading exercise involving the forms, a task to be written, and an exercise in translation. The second part contains a collection of short stories, dialogues and songs with music. The author is a teacher of German at the Sauveur College of languages.

—GERMAN NOVELETTES for school and home, selected from the best modern writers, and with etymological, grammatical and explanatory notes, by Dr. Wilhelm Bernhardt, (D. C. Heath & Co., Boston; 182 pp.; 80c.) possesses many attractions for those who are beginning to read German. The stories are very interesting, not too long, simple and elegant in diction and present a varied and useful vocabulary. Five novelettes are contained in this volume, which is the first of a series. The notes are abundant and judicious. The attention given in them to the etymological relations of the German and English languages is especially worthy of attention, as tending to develop the pupil's habit of seeing the meaning of the words in their composition and analogies.

MAGAZINES AND PAMPHLETS.

—Nursery Classics in School will attract teachers first of the articles in the June *Atlantic*. Let this statement represent the general trend of Mr. Scudder's article: "But in the lower grades, that is in the first, second, third, and even fourth readers, there is scarcely a piece of genuine literature; the proportion of ephemeral to lasting work is enormous. Yet it is in the years when these grades are read that the great majority of children pass their school life. After the fourth or fifth year of school the number of attendants rapidly diminishes. For the most part, children close their school life with absolutely no introduction to literature. They have learned to read, but they have had nothing to read." Besides this article we commend as deserving of special attention the sketch of the history of The Theory of the Social Compact; John Fiske's Completed Work of the Federal Convention; Holmes's Hundred Days in Europe, and Richardson's American Literature.

—The *Popular Science Monthly* opens with Are Railroads Public Enemies? which most of us will answer: "That depends upon circumstances." Prof. James has a very suggestive article on Some Human Instincts, Science and Pseudo-Science; Industrial Education and Railway Service; Grains of Sand and Appearances and Reality in Railway Service.

—In the Open Letters of the May *Century* is an account of Loynbee Hall, London, an institution for improving the laboring people. This single sentence from an instructive paper affords much food for thought: "The chief difficulty to overcome was the narrow sphere in which the poorer people did their think-

ing and their talking, and the whole purpose of these receptions, and of much of the other work, was to broaden the mental horizon of these people and give them more and pleasanter things to think about and talk about outside of the narrow circle of their tenant-house and neighborhood gossip." The articles on Finding Pharaoh, and Pharaoh the Oppressor, are sure of a wide reading.

—Circular No. I, of 1887, issued by the U. S. Bureau of Education, gives a very interesting history of the College of William and Mary in Virginia. This oldest college of the South has seen strange vicissitudes in the past two hundred years, and its closed doors appeal eloquently for help to those interested in the progress of that region.

—The *Bulletin* of the Botannical Department of the Iowa Agricultural College, (66 pp.) is an exceedingly interesting document, detailing as it does the original and practical work done by the classes during the past year. Prof. Halsted has evidently found out how to make his pupils capable investigators.

—The able paper on Japanese Treaty Revision: its Necessity and Our Responsibility Therefore, which was contributed to the *Bibliotheca Sacra* by Prof. J. K. Newton, of Oberlin College, is issued in pamphlet form, and should be extensively read.

SOME EDUCATIONAL EXCHANGES.

Let us briefly glance at a sample or two of three different classes. The first shall be those mainly devoted to outlining school-work. Among these the *Popular Educator*, of Boston, deserves a prominent place. For practical aids in elementary teaching we know of no paper to be recommended above it. It has presented an admirable series of articles on Geography Teaching in Germany, some extracts from which we have laid before our readers. Its work in number, reading, language, and primary science has been, as it seems to us, exceedingly practical and serviceable. *Common School Education*, (Boston) is yet a new venture, but is making a place for itself. It purposes to develop a definite plan in teaching each of the common school branches, and has secured a series of articles on each, practical and suggestive, and written by teachers of large experience.

As a second class let us take what we shall call the general educational journal. It is issued at some great commercial center, and aims to reach a wide field. It furnishes paper by distinguished teachers, editorial discussions, some school room helps, and some news. In fact its foible is omniscience. Foremost we place our Chicago neighbor *Intelligence*, which speaks of men and measures fearlessly and with no uncertain sound. It does valiant service, but is exposed to the dangers which attend free-speaking. Its Chicago notes are exceedingly readable and useful, and all its departments are fresh and interesting. Next we go again to Boston, and choose the N. E. *Journal of Education*. Why did it add "And National" to its title? Is there anything provincial about New England? Under the charge of Mr. Winship this paper has changed considerably.

It now gives more attention to methods, and its editorial discussions are more vigorous and useful. Its contributions also are good, but have a little too much of the "book making" air about them; some are copyrighted, and a tenuous and wandering "Applied Psychology" feeds the fashionable appetite for light reading on heavy themes. The New York *School Journal* is *sui generis*. It ts vigorous, wide awake, dashing even; but with a knight-errantry which has a certain suspicion of Quixotism about it.

Our third class shall be the State Journals. We have long enjoyed the visits of the *Canada Educational Monthly*. It has a certain solidity, sense and vigor which assure an intelligent constituency. Its leading articles have literary merit, and its "School Work" is at once original and practical—a very valuable feature of the *Monthly*. The *Illinois School Journal* has lately passed under the management of Prof. Geo. P. Brown, late principal of the Indiana Normal School. He has given it a new form and a very attractive mechanical appearance and is enlisting as writers for it some of the most active educators of the State. It is a vigorous and progressive monthly. The *Ohio Educational Monthly* keeps in close relations with the teachers of the State, who not only contribute excellent articles to its columns, but questions, answers, notes—things which give vivacity and vitality to an educational paper. Its editorial conduct is characterized by good sense and a perception of what is needed.

We might mention other exchanges perhaps equally excellent. On the whole, what is needed is a more complete differentiation. There are departments of service recognized in the different journals, and they are divided up sometimes to the point of weakness; but as yet the tendency to specialization is not strongly manifest. Primary journals have proved to be short lived, and those devoted to secondary education have not yet come into existence. There has been a remarkable development of vigor and variety in educational journals within a few years, and this may result in specialization.

NEWS AND NOTES.

—The Board of Examiners for State Certificates propose to introduce some changes this summer in the manner of conducting the examimations, which it is believed will render it possible to complete the work more easily in the time allotted for it without in any way detracting from its efficiency. The following are the more important changes contemplated: No special papers will be required in orthography, penmanship, orthoepy or reading. The first two will be judged of by the incidental evidences furnished during the examination. There will be oral examinations in reading, in which will occur tests of orthoepy. Political and physical geography will be united into a single paper. On the other hand, more of a distinction will be made between the limited and the life certificates. The examination in English literature will be divided into two papers, one on the history of English literature

which will be required for the limited certificate, and an additional paper on the life certificate designed to test the actual acquaintance of the candidates with English literature and their powers of comprehension and criticism. In a similar way the examination in pedagogy will be divided, the first paper, for the limited course, being confined chiefly to the art of teaching, while the second, for the life certificate, will deal with the applications of the principles of mental science to teaching. It is further proposed, at no distant day, to raise the standard for the additional branches required for the life certificate, from 60, the rank required at present, to 70. The attention of candidates is especially called to the provision regarding drawing, stated in the third paragraph of Section IV. of the circular of the State Superintendent, published in the last number of the JOURNAL.

—A committee of the principals of the Milwaukee schools is actively engaged in making arrangements for the entertainment of the teachers of the State at the meeting there this summer, and the citizens are disposed to co-operate with them. Plans for making the occasion pleasurable as well as profitable are on foot, and will doubtless be realized in a manner worthy of our metropolis. The meeting, we feel sure, will result in enlisting the interest and co-operation of a much larger number of the city teachers in the work of the State organization. There has unfortunately been a feeling that the teachers of that city hold themselves too much aloof, have too little interest in or sympathy with the work in other parts of the State. The meeting this summer ought to remove this state of things if it exists, and materially strengthen the State organization.

—Milwaukee is to be a sort of educational rallying place this summer, and the fact would attract considerable attention if the National Association, meeting at Chicago, did not occupy so large a place in the public mind. Three educational bodies, besides the Wisconsin Teachers' Association will gather in Milwaukee early this summer: The Association of Teachers in Business Colleges, a national organization; the American-German Teachers' Association, also a national body; and the Literary School. The Wisconsin Teachers' Association meets first, and in point of attendence and interest ought to rank first, and can easily do so if the teachers of the State respond to the efforts of the officers of the Association.

—The work on the new high school building at Elkhorn is being pushed forward rapidly. The building is to be a great improvement upon the former one, and to include such new features as the Ruttan heating and ventilating and closet systems and the Johnson electric heat regulator. The attendance at the high school this spring is very large.

—The indications at the present time are that there will be a large attendance at the Wisconsin Summer School for Teachers. Many school principals have signified their intention to be present, and high school assistants, and especially science teachers, are also looking to it as an important agency for helping them in their work. We shall be much disappointed if it does not have considerable influence upon science teaching in this State. What is needed now is a body of teachers who know what the right methods of teaching science are and who are in earnest in their purpose to apply them in the schools. The time is ripe for a forward movement in this matter; some communities are already demanding it,

and others are sure to follow. The summer school will not only help forward the demand, but will give to teachers the amount and kind of instruction which they need in order to meet it properly.

—The high school at Darlington during the past two years has purchased a library of nearly four hundred volumes, the money for which has been raised by lectures and entertainments given by the school. The books, are much used by the pupils, and the value of this adjunct to the work of a public school is already abundantly apparent. L. L. Hulburt is principal of the school. It is evident from a large number of cases reported in the JOURNAL during the year past, that most of our communities respond liberally to efforts made by the public schools to secure for themselves better equipments. The same means which have in so many cases furnished libraries will, if properly managed, furnish physical apparatus. Enterprise and effort only are needed. We feel sure that during the coming year it will be possible to report many instances in which such result have been secured. We must have better science teaching. There is a demand for it which will soon be irresistible. But better teaching is not possible without apparatus. The mere text-book grind must give way as teachers learn how science ought to be taught, and how they can secure for their schools the necessary outfit for teaching it properly. We hope before very long to be able to place before our readers some valuable suggestions as to what apparatus should be first secured.

—In the Madison schools a change of the conditions of advancement has been made. By the former rules passing from one grade to another was made to depend upon examinations wholly. There were two, an oral and a written examination; those who failed in either were allowed one more trial. By the new rules pupils who have the unqualified recommendation of their teacher can pass without further test. Others are examined once in each branch, orally or in writing as seems best, and class work is taken into account in estimating fitness.

—The River Falls *Journal* gives an interesting account of the industrial exhibit made by the pupils of the public schools of that city, under the direction of Principal Charles Friedel: "Among the articles exhibited made in the school workshop was a large Holtz Electrical Machine, constructed by Prof. Friedel, which is beyond doubt one of the best of the kind in the Northwest. The machine is constructed with double revolving plates, 24 inches in diameter, and two stationary upright plates 2 inches in diameter. It has two adjustable electrodes capable of motion in any direction. With the proper use of the Leyden jars this machine is capable of giving a disruptive discharge of from 14 to 16 inches. The plan of this machine is to a large extent original with Prof. Friedel, and contains many points of excellence. Another object of interest on exhibition was the stationary Electric Engine, constructed by Lyman Powell, assisted by Newell Powell, Levi Lein, Fred Davis and others. This engine is made of two vertical electro magnets, above which six armatures of soft iron revolve. These armatures are set in motion by six successive impulses from the magnets for each revolution; the impulses being caused by the current breaker, a little instrument made of brass and hard rubber and situated at the end of the revolving shaft. The current breaker, as it revolves, rubs against two small springs thus alternately making and breaking

the current. An Electric Motor Engine in process of construction by Fred Davis and Newell Powell, assisted by Chas. Patterson, Levi Lein and others, not having been completed as anticipated could not be exhibited. A telegraph line constructed by the boys in the mechanical department, and connecting the basement with the high school room, was in working order, over which messages were conveyed in regular business style, much to the credit of the boys whose genius constructed the line."

—The work of preparation for the Wisconsin exhibit at Chicago is going forward vigorously. Many counties are to be well represented, among which Clark, Pepin, Pierce, Dane, Sheboygan, Walworth, Rock, Sauk and Calumet, have come to our knowledge. It is more difficult to foretell the result from the cities, although in several the work is in a good state of forwardness. The colleges, normal schools, and institutions for special classes will also be well represented.

—A County Teachers' Institute of more than usual interest was held during the month of May, in Milwaukee. It was notable by reason of the places on the program occupied by Normal School teachers. Prof. Gillan gave excellent exercises in the common school branches. Miss Mary S. Cate, training teacher in the Milwaukee Normal, gave a very instructive talk on geography and conducted a primary class in reading, and Prof. Maxson, of the Whitewater Normal School, delivered an address on "Temperance Teaching in Public."

—Herbart R. Hammond, of Durand, was the candidate in the examination for Annapolis held in the eighth district.

—The school at Horicon is too large for the building, and new accommodations for one of the primary rooms will be erected this summer.

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	Seven Assistants (Ladies) in Eastern States	$500— 80	
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PUBLIC SCHOOLS IN THE ARGENTINE REPUBLIC.

The constitution of the Argentine Republic recognizes the duty of the nation as such both to promote higher education and to foster the common schools. It does this by requiring that the Congress of the nation "Shall provide for the advancement of intelligence by dictating plans of general and university education." The same instrument makes it obligatory upon the Provinces (or states) to maintain a system of public schools. The Argentines, who have modeled their constitution upon ours, and in general quote our precedents and try to follow our example, point with pride to these provisions in which they claim to have surpassed their model. In pursuance of these ends the Congress has established a subvention to be paid annually from the national treasury to the different Provinces for the promotion of common schools. This allowance bears a fixed relation to the amount invested in this object by the Provincial Governments, being from ⅓ to ¾ of the whole cost of the schools, according to the relative ability of the Province to care for its own interests. In order to promote a generous rivalry between the Provinces in the establishment of schools the nation offers besides a considerable premium to be paid each year to the state which shall have secured during the year the greatest proportional increase in the number of its schools, and in the attendance upon them.

Before speaking of the effect of these measures it is necessary to dwell for a moment upon the radical difference between the system of school organization in the Republic, and that which exists among us. In the Argentine Provinces the schools are created, maintained, directed, and suppressed by the state government. The state erects or rents the

school building, hires and pays the teacher, meets all the expenses of the school, and even purchases all the books, slates and other school utensils, which are loaned to the pupils free of charge. This business falls to the office of the Inspector, or State Superintendent of Schools, who appoints and removes the teachers, and changes them from one locality to another as in his judgment the interests of the service require. It will be seen that this centralization gives great facilities for the rapid improvement of the schools. The office of the inspector is not simply to advise, but to organize and direct; and this he does not slowly, and through subordinate organizations and authorities, but directly as the officer to whom all teachers are immediately responsible, and as the administrator of the property and funds of the school. But it is still more important to notice that this centralized organization is inevitable in the actual condition of society. This condition may be summed up in a single sentence: "There is no local initiative." The communities are unprogressive, sluggish, without ideas, and without organization.

I sat one day in the village of Lules waiting for the post-horses. They should have been ready for the diligence when we arrived, but as usual in the interior, they were not, and we were obliged to wait patiently five hours while the postillions were finding and catching them on the broad pampas. The straggling, neglected town lies hidden among orange groves, at the foot of a spur of the Andes, whose deep gorges, opening before us, covered with thick, semi-tropical forests, seemed to promise the coolness for which we ardently longed. A group in the dirty little store which served as a post-house, were discussing the railroad then in process of construction and soon to reach Lules. A woman summed up the opinions of the company somewhat as follows: "Yes, the railroad will soon be here, and with it will come the foreigners, who are accustomed to rise early and work hard all day long. They will bring money with them, and will quickly get all the business away from us. Then we shall have to starve or else work like slaves as they do, and so our beautiful, tranquil life will be gone." The incident is significant. Not wealth, nor business, nor progress, is the ideal of the interior, but "our tranquil life." In such communities all incitement to improvement must come from without. If the government does not move the tranquil life will remain unbroken. What the government entrusts to their hands will remain undone. It must found and administer the schools; it must furnish the books; it must enforce

the attendance of the children, and so at length the tranquility of centuries will give way to progress.

The measures of the national government produced immediate and striking results, the extent and nature of which will be most readily made apparent by example. For this purpose I shall select the Province of Tucuman, with whose history and actual condition I am more minutely familiar, first stating that it is one of the best interior Provinces. Its superficial area is about that of South Carolina; its population a little over 100,000; its latitude corresponds with that of southern Florida, and the Argentines speak of it with enthusiasm, as the garden of the Republic,—a sort of earthly paradise. It possesses every variety of climate. The broad plain which stretches away from the Aconquija mountains to the coast ranges of Brazil produces in abundance wherever cultivated the orange, the fig, the pomegranate, the sugar-cane and rice, and where uncultivated its green fields, as smooth as shaven lawns, maintain immense herds of cattle. To the west the country rises in a series of mountain ranges, whose base is clad with thick semi-tropical forests, up to lofty peaks glistening with perennial snows. A lovely land, indeed, but secluded from the world, where only faint echoes of its revolutions reach, and condemned by natural and political causes to centuries of torpid growth. In this Province in 1854, two years after the fall of Rosas, there existed not a single public school, and but two private schools maintained by the Franciscan Friars in their monasteries. The whole number of pupils enrolled in these establishments was only 225. The educational history of the province, therefore, commences with the following year, in which three public schools were founded at an expense to the government of $1,140. The growth was at first necessarily very slow. In 1868 there were only 22 schools with 1099 pupils enrolled, maintained at an annual expenditure of a little more than $9,000. The government had come to realize the magnitude of the task it had undertaken, not so much because of its own scanty resources, nor of the difficulty of obtaining supplies and teachers, nor even of finding centers in the scattered population of the country districts of sufficient importance to warrant the establishment of schools; but in the inertia and even the open opposition of those whom it sought to benefit. It was not enough to form and maintain schools, even to furnish gratuitously all the books and other utensils needed by the pupils; laws were enacted making obligatory the attendance of children of

suitable age, and establishing fines and penalties for disobedience. The working of these laws proved very unequal and unsatisfactory. Still moral progress was made, and in the more important centers a spirit in favor of schools was gradually created. When, in 1868, Senor Sarmiento became president of the Republic, the country was ripe for the great movement of popular enthusiasm which he created. Sarmiento had been himself a schoolmaster, and was the author of several textbooks for primary schools. Having been one of the most active pamphleteers in the long struggle against the tyranny of Rosas, and having in all that warfare always emphasized the importance of popular education as the only effectual remedy for the political evils of the country, the popular enthusiasm which carried him into the presidency was easily and naturally directed to the promotion of education. Moreover, the times were propitious. Business was never more prosperous; the revenues of the country were increasing notably every year; the European reputation of the new president made it easy to negotiate in England heavy loans for public improvements, which were invested in completing the great system of national telegraphs, and in building long lines of railroads to the interior. Every portion of the Republic felt the thrill of a new life, and education and public improvements became a mania. In Tucuman the extent of the impulse is sufficiently shown by the statistics. The twenty-two schools which existed there in 1868 had become 105 in 1874; the pupils enrolled had increased to nearly 8,000: and the annual expenditure of the government for the maintenance of schools had risen from a trifle over $9,000 to $66,360.00. This was the climax of the movement, the point whence the reaction commenced. But before speaking of this it may be profitable to scrutinize a little more closely the nature of these results.

The difficulty of obtaining teachers at all qualified for their work was early foreseen. In 1869 a law was passed authorizing the creation of two national Normal Schools. These, like the colleges, were placed under the immediate control of the Minister of Public Instruction. The first was opened in the city of Parana, in the Province of Entre Rios, in the year 1870. The rebellions in this Province led by Lopez Jordan in 1870 and 1873, interfered seriously with the work of the school, as the city was besieged by the rebels, and the building of the Normal School occupied by the commander of the national troops as his headquarters. The course of study of this school occupied four years, and

embraced, besides the common school studies, Geometry, Trigonometry, Surveying, the Natural Sciences, English and French. Its pupils were young men from the various Provinces of the Republic, appointed by the local governments, and, in consideration of pledging themselves to teach three years after graduation, each one was entitled to a beca, from the national government. The beca is an allowance of twenty-five dollars per month for his support paid to him out of the national treasury. The becas were distributed by law among the different Provinces with a view to extending the influence of these establisements to all parts of the nation. Candidates for the school were nominated by the local government and approved by the Minister of Public Instruction. In addition to this the pupils of the school received their tuition and book rent free. It would seem that by such inducements it would have been easy to fill up the school; yet, so great is the inertia of the interior that the places were filled very slowly. The aid afforded in these cases is undoubtedly productive of many evils—chiefly that the young men grew up with exaggerated ideas of their own importance and with the fatal and mistaken notion that their government owes them a living. But what feebler inducement would have sufficed to inaugurate the movement?

The Normal school of Tucuman is like that of Parana except that the course of study is reduced to three years by dropping the languages and a portion of the mathematics. This was opened in June of 1875. Two notable innovations were established in this school. The first was the admission of young women to the Normal classes. This was a great step in a country where long-established custom requires that boys and girls should be separated even in the primary schools. The girls who availed themselves of this opportunity were all from the city of Tucuman. They were ten in number, and were induced to take such a step by the pressure of poverty and the offer of a beca. Since then the national government has opened a Normal school for girls in each of the provinces. The movement is a deeply interesting one, and I believe will, in a short time, work an important change in the social position of woman in the interior of the Republic.

The other measure to which I have referred was taken by the government of Tucuman very soon after the opening of this Normal school. In order to derive immediate benefit from the institution, instead of waiting for the slow change to be brought about in the condition of its

schools which would result from the preparation of a few teachers each year, it ordered that all those in the employ of the government should come to the Normal school three months in each year to receive such instruction as they needed to fit them for their duties. To carry this into effect the schools of the Province were divided into three sections, and the sections reported at the Normal school in rotation for one term of study. Thus there was always at the school a preceptor's class, as it was called, and in three years each section had completed one full year of study. The vacations of the Provincial schools were so arranged as to correspond with the term during which the teachers were in the city, and the salaries of the latter were continued while they were attending the classes.

The beneficial effects of this measure were marked and immediate. And first it brought clearly to light the evils resulting from the hasty development of the schools. I shall enumerate some of these: First, the sudden creation of so many schools in a country where education had been almost completely neglected, had led to the appointment of masters many of whom were totally unfit for their places. The better educated portion of them were foreigners, who owed their appointments to their superior acquirements. Many of these were, however, adventurers of the most discreditable sort, men whose habits utterly unfitted them to to have anything to do with the training of the young, drunken, dishonest and unprincipled. Among the rude gentry of remote districts, who knew nothing of schools, and whose moral natures were not refined, they held their places without difficulty and neglected their duties, except when they anticipated a visit of the Inspector. There were among them, however, some refined and intelligent persons, whom misfortune, or a lack of capacity for getting on in the world, had driven to these remote regions, where they were ekeing out a miserable existence on small salaries, among rude men, whose ways of life and society were a continual trial to them—men who in their humble way were contributing to the moral and intellectual awakening of a new nation. All honor to them in their obscure but useful labors! Of the portion who were natives of the country, ignorance, lack of ideas, slothfulness were the chief defects. Mr. Prescott, speaking of the vexatious delays which occurred in the erection of the dwelling prepared at Yuste for the retreat of Charles V., after his abdication, says: "It was not in the power of Charles or Philip to change the laws of nature, or to ac-

celerate the sluggish movements of the Spaniards." But when the more slothful blood of the subjects of the Incas had mingled itself with that of the Spaniards, and centuries of inaction in a debilitating climate, under a benignant sky, shut out from contact with the world and in country places, have added their influence, what should we expect? The effect of the Normal school upon this class was marvellous. They become transformed under it. Eagerly receptive of new ideas, disposed to put in practice faithfully what they saw, they received, besides needed instruction, an impulse which they carried with them to their schools, and which produced immediate fruits.

And I would not fail to speak briefly, and in passing, of the schools from which they came. It is not easier to improvise school houses and furniture than to improvise schoolmasters. The superintendent of schools of the Province gave me an account of the first official visit he made to a country school. He found the master and some twenty pupils gathered under the shade of a huge pajara tree. Ox-skulls from a neighboring slaughter house had been brought for seats, and as the sun advanced in the heavens they circled around the trunk in order to keep in the shade, so that they had no need of a clock, as by their experience they knew the time of day quite accurately from the position which the school occupied. Two logs whose upper surface had been hewn off flat with an axe, and which were supported upon forked sticks driven into the ground, served as desks for the writing lessons. When school was dismissed, the books, slates, etc., were stowed away for the night under a diminutive thatched roof which nestled close up to the trunk of the tree. I have a photograph of his school, presented me by one of these masters, a Bolivian named Pacifico Franco. The master's dwelling,—which, by the way, is an indispensible part of every Argentine school —is the common mud house of the country—and a fair specimen of a country dwelling. It has but one room, a thatched roof, and a single opening—an entrance before which a bed blanket is hung up in place of a door. At the end of this dwelling is a shed, open at the sides but covered with a thatch, under which the school is gathered, seated on long cedar benches with long cheap desks in front. Under the trees near by stand the horses on which the children have come to school. For six months in the year rain, rarely, if ever falls; the mornings and evenings are a little cool, but the mid-day has the mild and genial warmth of September, and then the school under the pajara tree, or the

galpon,—for so the shed is called — is pleasanter than in a close room like the teacher's house, where the sun never enters and where ventilation is entirely impossible.

If it be true, as Mr. Herbert Spencer affirms, that both in bodily and in mental acquisitions the ornamental comes before the useful, I am sure that the rule cannot be extended to school houses. Those which I have seen in Germany and Switzerland, as well as those of the Argentine Republic, seem to be constructed in entire ignorance of the fact that the child has an æsthetic nature, whose culture gives that most delightful element of character which we call *refinement*, and which, highly as we appreciate it where it exists, is left almost as completely out of school arrangements, as though it were impossible to contribute to its growth. In the schools of which I am speaking the barest necessaries are furnished, and these with most frugal hand. The buildings actually in use are for the most part leased by the government, and are rude, small, ill-ventilated and leaky — many of them mere ranchos, built of bamboo and straw and having no floor but the earth. A school in the open air such as those I have described is in every respect healthier and better in such a climate. Here the pupils enjoy not only abundance of light and fresh air, but also the music and fragrance, the soft colors and varying shades of the landscape, which teach better lessons than rough benches, bare and battered walls, and all the savagery of an overcrowded and neglected school-room.

I should not fully set forth the character of the educational movement in the Argentine Republic should I fail to tell what is taught in these schools. I shall therefore group together a few notes taken from the report of the Superintendent of the Province for 1871: The studies contained in the schedule are the same as those known in our schools with three important additions: these are urbanity, religion and needle work. It is evident that these are traditions from the cloister school rather than intelligent additions made to meet recognized wants. In schools which may be aptly described by Goldsmith's phrase "noisy mansions," for all the children study aloud, where the master and the boys smoke in the school-room, where the floor or ground is littered with refuse, and where confusion reigns in all the arrangements, there may be sufficient occasion for teaching urbanity; but it can only be memoriter teaching. And yet has not our reaction against cloister schools gone too far in leading us to abandon the systematic teaching

of good manners? Surely there are few things more essential to success in life, to the promotion of social enjoyment and advancement, to the ease and comfort of the individual in the whole conduct of life, than a knowledge of how he is expected to comport himself in his social relations, of what that mysterious thing known as good breeding, which perhaps he is painfully aware did not surround him at home, requires of him in his intercourse with others.

It may be well for us to go further and ask whether, in establishing non-sectarian schools, we are not guilty of a still more serious oversight in that we do not provide for systematic moral instruction. We have, every year, brought to public notice, violations not only of plain principles of morality but also often of statute law by young men in our higher schools and colleges, and we fail to draw from them the lesson that our system of education is defective in the most vital point, that while we provide for the careful and systematic impartation of the knowledge of literature, science and philosophy, we leave to chance or to the imperfect influence of school regulations not carefully considered and generally unwisely administered by those who have never been taught to think systematically on moral training, the forming of principles and the shaping of conduct and manners. In our educational reunions we need to repeat Matthew Arnold's question and answer: "What is conduct? Let us answer, three fourths of life." In the hands of a Socrates morals or conduct might become once more the most important factor in intellectual education. I do not hesitate to declare my conviction that, at least in our Normal and high schools, the fundamental principles of morals and of good manners, as growing out of right morals, ought to constitute a branch of instruction. The habit of reflecting upon conduct needs to be wisely and patiently cultivated. It is a habit which has economical as well as moral bearings, for it leads to thinking upon the common things of every day life, and will not only make our daily experience a thousand fold more profitable in the development of that choicest fruit of a life-time, a noble, character; but also will lead to the avoidance of a multitude of thoughtless errors which bring misery in their train, as well as the more intelligent direction of effort in respect to all which constitutes material prosperity. Indeed, when I think of some of the obvious defects of schools considered as places of preparation for actual life I am often reminded of a comparison of Mr. Arthur Helps: "A large part of the preparations of mankind," he says,

"even in the most civilized countries, are like those which are made i Thibet for the Great Lama festival called the 'Feast of Flowers,' hel at the Lamaserai of Kounborum. There are colossal statues of me and women, exquisitely wrought models of birds, animals and eve buildings, and in fine there are decorations of the most elaborate an artistic kind. But they are all made of butter; and, though they hav been labored at for months, they serve only for one day's festival, an are then thrown down into a ravine near the Lamaserai, to be devoure by crows." And our Great Lama Festivals—are they not exhibitio and examinations? I should add that the sewing in these Argentin schools conforms strictly to Mr. Spencer's law—for the Senoritas a taught to work intricate embroidery patterns and left without the ski to mend a rent in their neglected gowns.

J. W. Stearns.

MADISON, WIS.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

Correction.—In the June No. of the JOURNAL, on page 269, 10 line from the bottom, read "the loss of will power consequent upon t degeneration of" for "upon the." On page 272, 3d line from the to 1st word, read "circulatory" for "nervous." On page 273, 12th li from the bottom, after the period, insert "You are now ready to exa ine the interior of the heart." On page 274, 11th line from the en insert "right" before "side of the heart."

STRUCTURE OF ARTERIES, CAPILLARIES AND VEINS. To unde stand how the heart is enabled to do its great daily work, the structu of the tubing through which it pumps blood needs to be understoo The walls of the arteries are made up of three layers. The outer lay is composed largely of tough, white, inelastic, fibrous tissue, having a sociated with it some elastic fibers also; the middle contains muscul and elastic fibers; while the inner is of elastic tissue lined with epith lium, the latter giving an extremely smooth surface over which t blood glides with the least possible resistance. In the small branches the arteries the elastic fibers disappear, the muscular fibers remainin but these also disappear before the capillaries are reached. In the c pillaries little else than the thin layer of epithelial cells remains, and

is through these very delicate walls that food passes out to feed the tissues and waste materials enter to be removed. In the veins three coats again appear, but they are not as thick as in the arteries. In many of the veins are pocket like valves formed by folds of the lining membrane, to which reference has already been made, but these valves are not found in the capillaries as was erroneously stated.

How the Blood is Moved Through the Body. When the ventricles contract the blood is quickly forced into the larger arteries whose elastic walls stretch, as we have seen, at the various places where the pulse was felt. But why should the arteries be so constructed as to stretch with each beat of the heart? This is a wonderful provision and the circulatory system would be very imperfect without it. If the walls of the bloodvessels did not stretch all the blood in the body would have to move at once, and as soon as the ventricles cease to contract the movement would stop. Under these circumstances the blood would at times flow so fast through the capillaries as to make it difficult for food to escape into the tissues, while during the other half of the time there would be no flow at all and consequently a very imperfect feeding and purifying of the system. Not only this, but during the violent efforts which the heart often makes the thin walls of the capillaries would be ruptured, as indeed they sometimes are as it is. With the walls of the arteries elastic the heart is allowed to rest during about two thirds of its natural life, while it is in a state of contraction only about one third of that time, and yet a constant stream is kept moving through the capillaries and the tissues are thus continuously supplied with fresh blood. It has been found that on the average the walls of the aorta are stretched to such an extent as to make the blood flow from it with the velocity with which water would issue from an orifice about nine feet below the surface, and that the pulmonary artery is stretched to about one third that extent, that is, by the equivalent of a column of water three feet high. The inelastic fibers in the walls of the arteries are in function like the threads forming the web of a pair of suspenders; they do not allow the elastic fibers to be stretched to the point which would permanently injure them.

How the Flow of Blood is Regulated. We have seen that the heart keeps blood circulating continuously through nearly all tissues of the body. We have seen too that a working muscle or a working ganglion receives more blood than one not at work. We have seen also

that at some times the heart beats faster than it does at others. To ur
derstand the wonderful and beautiful mechanism by means of which jus
the right amount of blood is sent to the organs of the body when tha
blood is needed is not an easy matter, yet it is a very important subje
and I think we shall be equal to the task.

In the first place, we need to understand that all the tissues of th
body, through which blood is sent, require the stream to be continuou
even when the whole body is at rest. This means that the heart mu
keep beating all the time, and that it may there are nerve centers place
within the heart itself whose function is to send nerve impulses, at th
rate of about 70 each minute, during a whole life time, to the muscl
of the heart which cause them to contract. In order that the nerv
centers within the heart may not over stimulate it and make it sen
blood too rapidly there is a nerve center in the medulla oblongata con
nected by nerves with the heart, and over these nerves there is continu
ally running to it nerve impulses which act as a break upon it, causin
it to beat more slowly than it otherwise would. This steadying or slow
ing ganglion, situated in the medulla oblongata, is connected by nerve
with other parts of the body and especially with the alimentary can
and lungs. It is owing to this connection of the stomach with th
slowing nerve center that a hard blow in the pit of the stomach ma
result in instant death; the nerves leading from the stomach are cause
by the blow to carry a strong nerve impulse to the slowing cente
which causes it to send to the heart so strong an impulse as to complet
ly paralyze it and death results. Owing to the same connection of th
heart with the stomach people have lost their lives by drinking, whi
heated, a large quantity of ice water; and still other people by drink
ing, on a wager, a large quantity of whisky or other strong drink. I
these cases a similar shock is produced, which results, in the manne
stated, in paralyzing the heart. It is owing to this same connection, too
that people frequently die from taking chloroform; the nerves from th
air passsges carrying a shock to the slowing center which, as in th
other cases, results in paralysis of the heart and death. In the sam
way also some odor, the sight of blood, or some severe fright may re
sult in over stimulating the slowing center and so retard the action o
the heart as to produce fainting. Such facts as these, if we thoroughl
understand them, will enable us to avoid many dangers which otherwis
we might encounter and will deter us from planning and executing

scare for our playmates. By means of still another set of nerves, leading from centers in the spinal cord, the rate of the heart's beating can be increased. The heart is then under the control of three sets of nerves, one carrying the stimulus for its ordinary measured beating, one carrying a stimulus for slowing the beating, and a third carrying a stimulus which is capable of accelerating its action.

By either of these means, however, for influencing the circulation of the blood, or any combination of them, it would be impossible to vary the amount of blood going to one organ without, at the same time, producing a corresponding variation in the amount of blood going to all other organs. Under these conditions alone if the biceps muscle, for example, needed more blood for greater action more blood would have to be forced through all other parts of the body also—a manifest waste of labor on the part of the heart and an evidently bad condition for all resting organs—but such and other disadvantages are provided against by the muscular layer in the walls of the arteries and veins, which, like the muscles of the heart, are under the control of several sets of nerve centers. In the first place there are nerve centers in the walls of the bloodvessels themselves, or near them, which keep stimulating the muscles in the walls of the arteries causing them all the time to "hold a certain grip on the blood;" these centers, however, may have their influence strengthened or weakened by other centers. When any muscle under the control of the will, for example, is brought into action so that it needs more blood, a nerve impulse is sent to the arteries which supply the muscle with blood by a second set of nerve fibers accompanying those causing the muscle to contract, and by inhibiting or paralyzing the nerve centers which control the artery muscles cause the muscles to relax, and thus open widely the channels by which blood must enter. Just so, too, when the engineer wishes to start his locomotive for a heavy task he turns on the steam—stimulates his engine—and at the same time the fireman opens the draft to supply the needed oxygen by which the energy is to be generated. In this way the skeletal muscles have their blood supply increased when there is need without flooding inactive organs and without over burdening the heart. Another nerve center situated in the medulla oblongata acts in conjunction with the nerve centers in the walls of the arteries to maintain the contraction of those muscles, and by varying the intensity of the action of this center a further regulation of the flow of blood is secured. The heart, for

example, sends a set of nerves to it, by means of which, when the hea is becoming too much fatigued by the demands upon it, it is able so t paralyze the action of the center in the medulla as to cause the bloo vessels over a large part of the body to open wider and thus diminis its work while the flow of blood is kept up. Then again when we blus only that part of this nerve center which controls the bloodvessels lea ing to the face and neck has its action diminished by a nerve impul coming from the brain, with the result of opening wide the arteries an filling the skin of the face with blood. So too, when more blood needed in the stomach the contact of food with the walls results in nerve impulse which paralyzes another portion of the nerve center i the medulla, thus allowing the artery leading to the stomach to ope wide in order that more blood may enter that organ. Of course, whe the food is digested and there is no further need of the large flow blood, the nerve impulses cease to be sent to the nerve center in the m dulla and it resumes its ordinary influence and shuts up the artery lea ing to the stomach thus allowing the blood to go to other organs whic may now be at work. In another case this same center has its actio strengthened. When heat is escaping more rapidly from the surface the body than it is being generated within, the cooling of the skin r sults in sending a nerve impulse which increases the action of that po tion of the center connected with the skin bloodvessels, and they a made to contract more than usual, with the result that blood comes t the surface in smaller streams and the rate of escape of heat is checke If, however, we pay no attention to the warning we get with this chang in the circulation and allow the conditions which are lowering the su face temperature to persist, by throwing the blood which naturall should go through the skin into the internal organs, an inflamed condi tion of the alimentary canal or air passages is likely to result which w name a cold.

WHAT BLOOD IS. Having become familiar with the mechanism fo maintaining and regulating the flow of blood through the body, we ar prepared to learn something of the blood itself. As we have all lon ago learned blood appears to be a red liquid. It is not, however, s simple a substance as it appears to the unaided eye, but is in reality complex liquid in which float two kinds of cells, called respectively re and white blood corpuscles. The red corpuscles are extremely minute shaped much like circular crackers, and make up nearly one half th

mass of the blood, giving it its red color. These red corpuscles have the power of drinking into themselves great quantities of oxygen as they glide through the capillaries in the lungs and of giving it out again when the acting tissues are reached. The blood without the red corpuscles could carry but a small amount of oxygen and this being true, whatever tends to diminish their numbers interferes with the oxygen supply which acting tissues require. We have often noticed that people deprived of sleep for a few nights become pale and languid. The lack of color is due to the fact that the red corpuscles have died much faster than they have been reproduced and in consequence the person, with the ordinary rate and depth of breathing, is unable to supply his muscles with the needed oxygen, and they contract feebly and he feels weak and exhausted. A knowledge of the fact that insufficient sleep diminishes the oxygen carriers in the blood should, if there were no other reason, correct the fallacy so common with young people that they can work just as well with only a little sleep daily. The white corpuscles, which are larger than the red and which have the power of changing greatly their form, are much fewer than the red, and their function is not well understood. For our purposes it is sufficient to remember that the liquid portion of blood is mainly water, containing in solution blood serum which resembles the white of an egg, a substance which on exposure to air clots, common salt, and related substances, together with various waste products produced in the active tissues. The clotting substance performs the important office of closing up the mouths of cut bloodvessels, thus preventing further bleeding. Whenever the inner wall of the bloodvessel is injured, also, as is the case when a surgeon ties an artery preparatory to cutting, the fibrin clots and so forms a tight plug in the end of the artery, thus greatly diminishing the danger from bleeding. Lint bound upon a bad wound stops the bleeding by quickly clotting the blood which runs into it thus forming an impervious cover for the wound. The efficacy of cold water lies mainly in the stimulating effect it has over the nerve centers which close the diameters of the smaller arteries, thus diminishing the blood pressure, which all the time tends to tear away the clotting blood faster than it can form.

How we May Interfere with the Circulation of the Blood. On wrapping the string about the finger we found that the blood returned less readily to the heart. On twisting the cord about the arm above the

biceps muscle we learned that the pulse became imperceptible at the wrist; and from these two experiments it is easy to see that whatever compresses the body anywhere, like tight elastics about the arms or limbs, tight shoes or tight garments of any sort, must not only tend to diminish the blood supply to the organs but must also have the effect of increasing the daily labor of the heart, a matter of great moment with people overworked generally, and with people afflicted with heart disease. When one limb was placed across the knee of the other and we saw the toe thrown out with each beat of the heart we were led to face another way of interfering with the circulation and of increasing the burden of the heart. The movement of the toe was due partly to the lifting effect of the blood as it stretched the compressed artery, and partly to the fact that the blood, in turning a sharp angle, pressed outward on the knee and thus tended to move the toe forward. Engineers have found that even one right angle in a pipe discharging water diminishes the amount flowing through it very much. When we are tired and sit down to rest we instinctively straighten out our limbs thus reducing the number of angles. So, too, whoever is very tired and lies down to rest instinctively lies straight and throws his arms out, because his heart is tired also and this attitude reduces its labor to the minimum. The lying posture rests the heart also because then it has only to pump the blood horizontally instead of vertically, as when we stand. The diminished labor which lying down gives to the heart explains why we should never raise a person who has fainted into the vertical posture until after he has been revived. So, too, if we sleep in bed with insufficient clothing, so that we are obliged to curl up tightly to prevent so rapid conduction of heat from the body, we are not giving the heart a fair chance to rest. We oblige it to force blood around sharp angles all night, thus greatly increasing its labor.

EFFECTS OF STIMULANTS AND NARCOTICS UPON THE CIRCULATORY SYSTEM. We have already seen that alcohol, by paralyzing the centers which control the contraction of the muscles of the arteries causes the organs to become flooded with blood and the temperature of the body to fall. Immediately following this relaxation of the circulatory tubing, the heart, according to Dr. Richardson, beats faster as a result, and in so doing becomes over worked and with the return of the system toward the natural state again the action of the heart falls below what is natural on account of exhaustion. The red blood cor

puscles are disturbed by the presence of alcohol in the blood and become shrunken, and thus unable to carry oxygen to the tissues at their usual rate. By its strong attraction for water alcohol tends to harden the membranous tissues of the body and hence to interfere with the passage of food from the capillaries and of wastes into them. By the accumulation of fat upon the walls of the heart, which alcohol tends to produce and by the deposit of fatty droplets within the muscle cells themselves in place of the true contracting substance, the heart, while called upon to do more work, is in reality a weaker organ. By the same fatty degeneration the walls of the arteries become weakened, and thus liable to rupture, and less perfectly under the control of the beautiful nervous mechanism which regulates the flow of blood to different organs.

Tobacco, on account of its general tendency to weaken muscular power, enfeebles the heart, causing palpitation, and at the same time interferes with the development of the oxygen carriers of the blood, so that in many cases the user has a pale, pasty complexion; not only this, but the corpuscles which are in the blood in diminished numbers have their edges crinkled by the nicotine and are not the perfect working units nature intended them to be. With these facts in mind it is not strange that tobacco should be so especially injurious to young people whose muscular systems are yet developing.

F. H. King.

River Falls, Wis.

IN THE LIBRARY.—SCHOOL INSPECTION.—III.

15. *Inspection of the Boys' School.*—Having finished his inspection and examination of the infant school, the inspector will proceed to the upper schools, taking the girls' school first, unless otherwise arranged with the teachers. But, as the inspection of the girls' school will be the same, except in respect of needlework, as that of the boys, while that of the boys will give a more complete account, I will suppose the girls' school done, and that the inspector is now going to begin with the boys. It is understood that while he has been inspecting the girls' school his assistant has been examining the boys' school in the elements, and *vice versa*. In the boys' school, as in the infant school, the circular (see § 5) has prepared all for their part, and he finds the school, when he enters

it, proceeding in its ordinary way. No derangement of the routine takes place, except such slight derangement as is caused by the presence to-day, for the purpose of being examined, of children who have left school, or who would not ordinarily be present but for the examination. This rule, that the school shall be going on in its ordinary way until disturbed by the inspector, is a vital thing. If work is suspended, and the children are sitting idle, in eager expectation, order cannot be preserved, the tone is lost, and the highly-strung nerves of children and young teachers break down. Moreover, owing to accidents of road and rail, the most punctual of inspectors may be late. If the school work is going forward in the ordinary way, the evils of an accidental unpunctuality are reduced to a minimum. But, if not, the injury done to the prospects of the school for that year's examination may be most serious.

16. *How the Inspection should be Begun.*—On entering the boys' school, the inspector will begin his inspection by watching for some little time, as before described for the infant school (see § 7), the school at work. There is no loss of time in doing this. The assistant is either doing some mechanical work for him, such as testing the Registers, or is examining in the elementary subjects in another department, or is finishing another school in the same town. In the case of a boys' school, there will be some difference in the method of inspection, according as the school is a small or large one. If it is a small one, consisting only (say) of a principal teacher, and two pupil-teachers, the principal teacher must always be taking a large share in the actual work of teaching; the amount of superintendence which he will have to do will be comparatively small; the school will depend for its instruction mainly on his own exertions; and the inspector accordingly will have to watch how he teaches, quite as much as how the pupil-teachers teach. But in a large school, consisting (say) of a principal and an assistant certificated teacher, with five pupil-teachers, and three candidates, the case is different. Here the principal teacher must, during the year, have been largely concerned with superintending and directing, rather than with acutally imparting knowledge. Not that a good and active teacher will ever fail to take some teaching work himself, both to keep his own hand in, and also to raise the standard of teaching and set an example. But still his main business, if his staff is fairly efficient, will have been superintendence and not teaching. And the inspector accordingly will be able to have him by his side as he goes through the school, to reply to any

questions, to assist his judgment, and to give any necessary orders. This will be found in fact to be an excellent way of inspecting the principal teacher. Whether, however, the school is large or small, the first thing for the inspector to do is to consult the time-table, so as to understand what is and ought to be going forward, and to know how best to allot his time. In the case of a big school, he will also, if possible, consult the log-book. The log-book of a large school, kept by an intelligent and efficient teacher, will throw a flood of light on the organization and character of the school; the methods taken for instructing and training the pupil-teachers; the share of the work in the school which has during the past year been committed to assistant-teachers and pupil-teachers; the course of instruction which has been given in the higher subjects to the upper classes; the difficulties which the principal teacher has met with in his year's work, and the means taken to encounter them. These, and many similar particulars, may be gathered from a well kept log-book; and, after studying it, an inspector will go to his task prepared in a great measure with a notion of what he should look at or look for. It is not a bad plan to make teachers bring their log-books to the collective examinations of the pupil-teachers, so that the inspector may have time to study them carefully. The inspector may with great advantage keep a private rota, for this purpose, of all the teachers in his district, so as to secure that every teacher should bring his log-book to the collective examination every two or three years. The inspector, in watching the routine of the school, will consider also such important questions of method as the means taken to to promote emulation, and to encourage effort in the scholars; whether, for example, they are marked, either by valuation or place-taking, for any of their lessons as well as for attendance. It is singular that this is so much neglected in elementary schools. They might take example in this respect from the secondary schools.

17. *Importance of Last Year's Notes.*— In the boys' school, as in the infant school, the inspector will endeavour to see a change take place. The remarks made on this matter in reference to infant schools apply here also (see § 7); and the bigger the school, the more important is this part of the inspector's duty. Having witnessed a change, or otherwise satisfied himself that the school is well in hand, conducted methodically so as to economize time, to avoid disorder, noise, and confusion, and to produce habits of obedience and self-restraint in the

scholars, the inspector will proceed to look to the teaching of the various members and proposed members of the staff. If he has seen the school before, he will, of course, be careful to have with him his note-book of the last year, so as to be able to refer to it and see what improvement (if any) or the reverse has taken place. Nothing can be more discouraging to a young teacher, who has had fault found with him last year, and who has taken some pains to improve, and has looked forward with anxiety to the inspector's visit, than to find that the inspector takes no notice of the fault. And, on the other hand, it is surprising what an effect it has in a school, when the teachers find that the inspector remembers them, and all about them. A word from the inspector at the end of the lesson—"I see you have remembered what I said to you last year about so and so"—will works marvels.

18. *Inspection of the Teaching.—How to Inspect the Candidates for Pupil-Teacherships.*—Unless there is some special reason for departing from that course, the inspector will begin his inspection of the teaching, by looking to the teaching of the candidates. There is no more difficult task that an inspector can have to perform, than that of judging the merits of candidates for pupil-teacherships. The pupil-teachers have definite work to do by which the inspector can test them. But it is often not till a day or two before the inspection, that managers are in a position to present a boy as a candidate. And then of course the inspector is in face of the usual difficulty of judging of raw material. To take a boy out of a class and judge whether he will make a good teacher is no easy task; and the responsibility and difficulty are increased when the managers present four or five candidates for one vacant place, and ask the inspector to select the best. In practice I have found the following simple tests valuable:

Select a class to which the candidate may give a lesson; which should not be one of the youngest in the school, but a fairly steady one, somewhere about the middle of school. It is a great mistake in testing or training candidates and young pupil-teachers, to put them to take very young classes. If the candidate has ever taken a class before, observe how he holds himself before the class; whether he adopts a free and erect carriage, or is slovenly and listless in his postures. Even if he has only taken the class once or twice, he ought to have received some drill from the principal teacher in these matters, to say nothing of his having, while a scholar, observed how his teachers conducted themselves in

these respects. Observe whether he shows any power of using the eye in controlling his class. One of the first things that a teacher has to learn is to make his class feel that every member of it is continually in his eye. If the candidate is short-sighted, he should not be be passed for apprenticeship unless he has become familiar with the use of spectacles. Put the candidate to take a reading lesson. Use the lesson as a means of seeing whether he has been trained at all in the ordinary elementary rules of teaching that subject (see § 21); and after hearing this for a sufficient time, require him to question his class, as a means of testing his general intelligence and capacity, and his readiness.

19. *Inspection of Pupil-Teachers.*— Having finished with the candidates, the inspector will proceed to take the pupil-teachers. He has already, when he came into the school, by examination of the time-table and by a conversation thereupon with the principal teacher, if the school is a large one, settled in what order he means to review the teaching of the pupil-teachers; which of them he means to see taking the ordinary instruction in reading, writing, or arithmetic; and from which of them and at what o'clock, he will expect a collective lesson. In arranging his program for this part of the inspection (which it is most essential should be carefully thought out, so as not to waste his own time, or that of the school, and so as to get the greatest possible knowledge of the school, in the shortest possible time) he will take into consideration the pupil-teacher papers, which have been worked for him at the collective examination, and which he should make a point of having looked over before he comes to the school. If, for example, a pupil-teacher has done badly, he will give particular attention to his teaching, in order to see if his bad work in examination is due to idleness or to devotion to teaching

20. *Program of the Day's Work.*— I have already supposed that the school, if a large one, consists of an experienced principal teacher, one certificated assistant-teacher, five pupil-teachers, and three candidates (see § 16). In order fully to illustrate how the inspection of such a school should be conducted, I will further suppose that the assistant-teacher is a probationer, whose teaching power must be specially tested, but that, as regards the principal, being a well-known and experienced man, it will be unnecessary to require him to give lessons, but will be sufficient to ask him to take part in the examination of one of the higher subjects (see Appendix II.); and that of the five pupil-teachers, one is

at the end of the fifth year, one of the fourth, one of the third, one of the second, and one of the first year of apprenticeship. The inspector, having examined the time-table, and conferred with the principal teacher, will make sort of program for himself, thus:

I will test the three candidates from 10 to 10.30: at 10.30 I will begin my inspection of the teaching of the staff. I see by the time-table, that the following teachers will be doing the following work with their respective classes at the following hours: I shall therefore take the following course in my inspection[1]—First year pupil-teachers—reading lesson at 10.30; fifteen minutes, 10.30—10.45. Second year pupil-teacher—writing lesson at 10.30; fifteen minutes, 10.45—11. Change, and ten minutes' recreation, at 11. Watch this; speak to the senior pupil-teachers as to the lessons they are going to give. Fifth year pupil-teacher—collective lesson in English grammar at 11.10; thirty minutes, 11.10—11.40. Fourth year pupil-teacher—arithmetic lesson at 11.40; twenty minutes, 11.40—12. Third year pupil-teacher—collective lesson in geograhy at 12; twenty minutes, 12—12.20. Singing heard, and dismissal watched; 12.20—12.40; and, if the time is likely to be short at the end of the day, and an opportunity will not occur next day, pupil-teachers and candidates spoken to respecting their papers and teaching. Assistant master's collective lesson in English history at 2; thirty minutes, 2 to 2.30. Examination in grammar, geography, history, and the specific subjects of higher instruction, throughout the school, the principal, assistant, and senior pupil-teachers taking a part; 2.30 to 4.30. Consideration with the principal teacher of the condition of the school as regards the results of inspection, and, if not done before, review of their examination papers with the pupil-teachers; 4.30 to 5.

Such a program as this will give a complete view of the whole organization of the school, its staff, their capacities and duties, its system, &c.; and, when combined with the individual examination in the elements, which is to follow, or has already been effected, forms as complete and searching a test as any institution has to go through. No other class of schools, it may safely be asserted, could stand such a trial. And now for the details of it.

21. *Inspection of a Reading Lesson.*—The inspector, accompanied

[1] N. B. The secular hours of the school are supposed to be fron 9.40 to 12.30; and from 2 to 4 for the lower classes, and to 4.30 for the senior classes. The inspector is supposed to have arrived at 9.50.

by the principal teacher, goes to the class-room, where the first year pupil-teacher is to take his reading lesson. They place themselves where, with least intrusion, they can best observe and hear all that passes between the young teacher and his scholars. The principal teacher does not of course interefere at all: the inspector only so far as the shortness of the time at his disposal renders it necessary for him, when satisfied on one part of the process, to ask the pupil-teacher to pass to a latter part. For example, in the above supposed program (see § 20), the reading lesson of the first year pupil-teacher will really last half-an-hour; but the inspector can only afford fifteen minutes for it. He must, therefore, if he wants to see the pupil-teacher's teaching in all the different parts of a reading lesson, stop him, when he is satisfied with one part of the process, and request him to go to another. It is, of course, desirable to do this as little as possible; as it discourages. If a young teacher has prepared his lesson properly, all the parts of it will hang together: and he will be sorely put out, if told to alter his course. In the above supposed case, where, simultaneously with the first year pupil-teacher's reading lesson, a second year pupil-teacher's writing lesson is going on, a better plan will be for the inspector to hear the reading lesson, say, for eight minutes, then to go for twelve minutes or so to the writing lesson, and to return for the remaining ten minutes to the reading lesson. And this kind of thing should be done as much as possible; *the great object in inspection, as distinguished from examination, being to disturb the order of the school as little as possible.*

On reaching the class-room, or part of the school-room, where the reading lesson is beginning, the inspector, having regard both to the pains which have been taken by the principal teacher in training his pupil-teacher, and to the diligence and aptness of the lad himself, will observe such things as these, in addition to those already noted for a candidate (see § 18):

First — Does he place himself where he can duly see, hear, and be heard? — The class should be so arranged and he should be so far off from it that he can see every child in it with a movement of the eye only, by just raising the eye from the book. No child should be so placed, nor should he so stand or sit, that he is obliged even to turn his head to look at any one child, still less to turn his body. He should have a little desk in front of him, on which he may place his book and

preparatory notes he may have made, so as to have his hands free. On the other hand, he must not be so far off as to be obliged unduly to raise his voice to make himself heard, or as that he cannot easily hear the furtherest child in the class reading in his natural voice. Under no circumstances must he move to his scholars, or touch them, but must control them with the eye; and the inspector, if he has with him his notes of what he was as a candidate, will look to see what progress he has made in the use of the eye.

Secondly— What are the relations between him and his class?—Has a year's apprenticeship produced a reserve on his part towards him? Do they watch his eye? When he speaks is he attended to? The inspector will, of course, inquire carefully how long he has been in charge of this particular class. Is he ready and full of resource when a hitch or difficulty occurs in the lesson? For example, when a child is unable to master a word or phase, does he understand how to get forward without telling or helping him too much? Does he keep all the class at work? For example, by questioning, and by requiring the better readers to help the worse; and by not putting the children on to read in regular order.

Thirdly—Does he understand the proper use of simultaneous teaching?—Nothing will show better than this whether the principal teacher has taken any pains to train him during the year, and nothing in teaching reading is more important.

A reading lesson, which is designed to last half-an-hour, should be conducted somewhat in the following order:

(1.) *Fifteen minutes.* (*a*) The teacher reads a passage aloud, the class listening. (*b*) He then reads it aloud by a few words at a time the children reading after him simultaneously, and imitating his voice inflexions, and pauses as exactly as possible. (*c*) The children then read it aloud simultaneously. He stops them, and corrects them, if any portion of the class are working badly; and sometimes makes one portion of the class, sometimes another, go on alone without the rest. (*d*) This process is repeated until time expires.

(2.) *Ten minutes.* He puts on the children individually in the passage which they have been reading simultaneously, and in other passages, taking care to make the worst readers go on oftenest, and calling attention to the merits of the best readers.

Five minutes. He questions rapidly on the matter and text of the

lesson, making the children answer by hands, or by some other sign, and not allowing them to answer simultaneously.

Suppose then that, as suggested, the inspector listens for eight minutes to the first of the above described processes, then goes to see for twelve minutes the writing lesson of the second year pupil-teacher, and then returns for ten minutes to hear part of the second and the whole of the third processes of the reading lesson, it is clear he will have been able to form a good notion of the sufficiency of the pupil-teacher in all parts of the work of giving his lesson.

Fourthly—Does he use provincialisms, or avoid them, and check the use of them in his scholars.

Fifthly—Does the lesson show any signs of having been prepared beforehand?—Many teachers will not think it worth while to prepare a reading lesson beforehand. They will take the trouble to prepare a geography or grammar lesson, but not a reading lesson. This is a mistake. *Lessons in the elements, as well as lessons in the higher subjects, should be carefully prepared beforehand.* For example, the teacher should not only have settled beforehand what lesson in the reading book he will take with his class at the time appointed for the reading lesson, but should have selected the passage or passages in that lesson most adapted for simultaneous teaching, should have noted difficult words (that is, words liable to be mispronounced or misunderstood), and thought of the general nature of the remarks he will make on those words; and should have settled in his mind a line of questioning with which to conclude the lesson. Preparation in such an elementary lesson as a reading lesson is, of course, more necessary in the case of a young pupil-teacher than of an experienced teacher, because he will probably himself be liable to commit many of the faults and fall into many of the mistakes which his class will make. Indeed it is difficult to see how an ordinary first year pupil-teacher can usefully give a reading lesson without such preparation.

Of all vanities and fopperies, the vanity of high birth is the greatest. True nobility is derived from virtue, not from birth. Titles indeed, may be purchased, but virtue is the only coin that makes the bargain valid.—*Burton.*

EDITORIAL.

THE list of books recommended by the State Superintendent for the township school libraries authorized by the last legislature will be found in this issue of the JOURNAL. A glance at it will reveal the general principles that have controlled the selections. In the first place, it has been the purpose to select books which will be read, and read by pupils in the first, second and third forms of our district schools. The arrangement of the lists shows which, in the judgment of the superintendent, are best fitted for each form, but this is merely a guide to town clerks in purchasing, that they may be able fairly to meet the wants of all classes of pupils. In the second place it has been the purpose to select books which will cultivate a taste for good reading. They are not dull books, but they are all believed to have real merit; they are worth reading. Most of them contain useful information conveyed in an attractive from; they develop wholesome views of life; they are related to school studies, which they serve to light up and make more interesting. Thus they bear upon geography, history, literature and elementary science. The last ten or fifteen years have been wonderfully productive of admirable juvenile books, and this effort on the part of the State to place wisely selected libraries of them within the reach of all the children is one of the most important educational movements of the time. The long winter evenings in many a humble home will be made delightful and instructive by these treasures, which have hitherto been beyond the reach of their inmates. Schools will be made more attractive because they are the guardians of them. Self-education will be promoted; because now the boy who wishes to improve will have the means for doing so placed within his reach. The measure takes a long step towards remedying the great difference in opportunities between the country lad and his more fortunate fellow of the cities. We commend the list to the careful study of teachers and school officers. It is, we understand, the purpose of the State Superintendent to keep at his office a complete set of the books recommended, so that officers charged with purchasing may have full opportunity to examine them there for themselves.

INSTITUTES do not depend for their success altogether upon the skill of the conductor or the excellence of the program. Occasionally there is encountered an irresponsiveness on the part of the teachers which baffles the best efforts to put life into the proceedings. These irresponsives are the shy, the ignorant who fear to display their defects, the giddy, whose heads are filled with picnics, dances, flirtations—everything but the work of the institute—and the wall-flowers. We have sympathy for the shy, we respect the discretion of the ignorant, but it is difficult to have patience with the giddy and the wall-flowers. One who has not earnestness of purpose enough to attend to business in business hours is not yet fit to direct himself, much less to teach and direct others. To cure giddiness a little wholesome discipline is necessary. A conductor who finds an institute thoroughly pervaded with this spirit will do more good to the schools

of the county by declaring the institute adjourned on account of the giddiness pervading it, than he will by going on drearily through the appointed days. There may be cases in which it would be a wholesome measure to strike from the roll the names of those who only distract and disintegrate the institute. As to the wall flowers, what can be done with them or for them? They are teachers who "visit" the institute but do not enroll, or if they enroll do so at the close, or if enrolled earlier they absent themselves when work is to be done. They wish to be in the institute but not of it. They sometimes whisper and simper, and criticise. Who are they? We are sorry to say that sometimes they are teachers in graded schools, who allow themselves to say and think that the institute is for the country teachers, and assume a sort of superiority to the whole thing. Their attitude in this matter is inexcusable. Do they fear the contact and questioning of the institute? Then they need it. They need it to develop their resources, to make them more self possessed, and to help them to a truer estimate of themselves. It is no purpose of the institute to humiliate or annoy anyone. If there ever was this in the institute work in this State we venture to assert that there is none of it now. The purpose of the institute is to help the teachers and it can help them properly only when they heartily co-operate in it. What ought we to think of fifty to a hundred teachers who, during an entire session, heartily work together to help themselves, and yet do not strike out one interesting question, one useful suggestion? We believe that such a case was never heard of. Your hearty, earnest, manly or womanly co-operation is what is needed to make the institutes a success. Go to them; enroll; do frankly the best you can for them; don't be a wall-flower; don't be a giddyhead.

THAT stupid boy needs rather more intelligent attention at the hands of the school teacher. He may be veritably stupid—there are a good many such, boys in whom the physical greatly overrides the intellectual; but then, he may be simply an exceptional child. The work and ways of the school room are planned to meet the needs of the many, and they fail of reaching him because his needs are different. There are enough instances of distinguished men who were accounted dullards at school to warn us against hasty conclusions. Isaac Newton kept his place at the foot of his class; Wordsworth was a failure as a student, and it would not be difficult to swell to large dimensions the list of distinguished literary men who were accounted far from brilliant at school; Francis Galton writes, "I am surprised at the mediocre degrees which the leading scientific men who were at the Universities have usually taken, always excepting the mathematicians. Being original they are naturally less receptive; they prefer to fix of their own accord on certain subjects, and seem averse to learn what is put before them as a task." Now it is a puerile fallacy to argue from this the uselessness of the schools, and overlook the fact that probably much longer lists might easily be prepared of distinguished men in various walks of life who were also noteworthy for their success at school. The pro-

per lesson to be drawn from such cases is not hastily to infer dullness or lazines because a boy does not draw well in the school traces. Try him somewhe else. Find out if there be not something he is interested in, something h is interested in, something he knows and likes to work at. Put him at thi Let him feel the satisfaction of knowing that he is worth something, that h favorite lines of effort are worthy, and he will be transformed by the discover He may develop from this line into many others, but at least he will be starte and cease to believe himself to be, what he in reality is not, that stupid bo Discrimination, then, is needed in dealing with dull boys, insight, ingenuity find out what there is in them; and for this a teacher must be willing to depa from the routine work of the school and adapt himself to the character an needs of his pupils.

EXHIBITS emphasize but one side of school work--the manual side. Pe manship, drawing of various sorts, kindergarten work, wood working and me al working, mounting botanical specimens, these branches and such as the which give products to be presented to the eye receive a decided stimulus fro educational exhibits. Perhaps the examination papers are not without som effect upon the general studies, but already it is freely said, "Nobody rea these," and accordingly their influence is very much lessened. It is felt t that examination papers are an exceedingly unsatisfactory test of a school. Su pose them to be free from open frauds, that all the papers of a class are sent an all as they came from the hands of the pupils, still who can determine the rel tion of what is written on these papers to the real growth of the pupils? Ho closely was the work of the school shaped to securing precisely the answers i these papers? How closely do they follow the wording of a text-book? fact, after looking them over what have you learned of the schools from whi they came? Perhaps some one by giving time to the matter might learn som thing useful about the kind of questions to be used in examinations, but th process is so long and difficult that it cannot be recommended. No committe charged with reporting upon an exhibit ever yet, so far as we have heard, a tempted to classify and discuss the examination papers presented, so as to d rived from them practical suggestions regarding school work. In truth we a compelled to agree with the judgment that they are of no value at the exhibi They mean little and teach nothing. In their reflex effect upon the schools, s long as there was a belief that such things are studied, there may have bee some advantage; there certainly were some disadvantages — such disadvantage as we are beginning to realize attend the over-doing of written examinations a school tests. But the reflex of exhibits in the manual work of the schools i doubtless of some value. Not only does it lead to the increase in the schoo of work of this class but to the improvement of it, to accuracy, neatness an invention. Those city schools which have contributed have felt this impuls and some which have not contributed have felt that the defects of their wor held them back. They were unwilling to be shown to disadvantage. Stagnan

schools have taken no part in exhibits. They hide themselves, and refuse to move lest their weakness and inefficiency should become evident. For city schools as a class exhibits have for the present done all that they can do, unless it may be possible to require all to participate. For the district schools, in our judgment, much may still be done by exhibits in promoting that pride im manual skill which is at present lamentably lacking in them.

MATHEMATICAL SECTION.

LOGIC FOR THE LITTLE FOLKS.

Perhaps no question is more frequently asked of the writer hereof, after the presentation of some topic in arithmetic to class or institute, than this one: "Would you teach children by this method? Can they understand the reasons for the process?" Usually from direct statement or necessary inference the opinion is seen to be held, that children acquire easily and reason with difficulty, while adults acquire with difficulty and reason easily; therefore it is best to teach children the facts of arithmetic, and the reasons will be readily comprehended at a later stage in their school work. This doctrine, thus given a psychological foundation, seems unassailable. At the risk of repeating what is so familiar to hosts of teachers as to be stale and uninteresting, and perhaps so novel and heterodox as to be unacceptable to as many more, we venture a few words in favor of the proposition that no teacher of arithmetic is justified in saying to her pupils: "I can't tell you why this is so, but it is so, and you must learn it," or "you cannot understand this now, but you will see it when you get older." Does such a teacher ever consider that the children, with their proverbially keen insight into the real truth of the matter, may be already trying to calculate how old *she* will need to be to understand it? One cardinal point in the Grube system, and all its modified forms, is that children shall be taught only what they *can* understand, and so that they do understand it, and not be permitted to memorize anything until they understand it, nor be permitted to take any statement in mathematical work upon the authority of the teacher. "Then you would try to teach children of ten years why the divisor is inverted in division of common fractions?" Softly now, for we are on dangerous ground. This is of course the pet illustration of the absurdity of the doctrine herein advocated, because the process is so easy, the rule so delightfully brief, only five words, and the reason so unendurably logical. Well, we should *try* to teach a boy of ten years the process named, so that he would understand it or not teach him at all. Why does not this latter alternative sometimes present itself to those teachers who scorn arithmetic for discipline's sake, and restrict themselves to its practical and immediately useful phase?

Secondly, it is at least conceivable that a person might live to a healthy old age and enjoy a prosperous career, without ever knowing even the *rule* for dividing one complex fraction by another.

Thirdly, would it not be as profitable for a boy of ten, or any one else who couldn't understand this topic to pass on to United States money, or even to interest, which he can master? Any teacher who has taught a class in Robinson's Practical Arithmetic knows with what an excellent bound they pass from the latter portion of the work in common fractions to the succeeding chapter on decimals. They are leaving a topic which, because they no not understand it, is hard, for one which is easy because they do understand it. If children cannot master the subject as now taught, let us revise our practice — if not our text-books. But if the pupil is only asked to take one step at once, to draw a single inference from things he understands, and is given due time to make that conclusion secure, we doubt if any part of the arithmetical instruction now given in our schools need be omitted, though it may be far wiser to omit much of it. Children do draw very correct inferences before they can walk. Before they can talk they know which parent to mind, if either, and which to tease. If not asked to reason about matters of which they are ignorant, or which are beyond their comprehension, they are as ready as adults. A child of seven would find a forced march all day with the army an impossible feat. Is it because he cannot walk? But the child of seven is a more free, easy and graceful walker than the man of thirty-seven, and with due exercise of his powers can in time take as long a journey. He will hardly acquire the power, however, by waiting till he is a man to begin, lest he get tired. Such experience as we have had in teaching children any mathematical truth who have had no previous instruction, confirms us in the belief that if not asked to take the stride of a man, children can walk through their arithmetic with ease, and reason upon this subject as easily and naturally as upon any other.

We pass, however, from the objection that children cannot reason, which seems to us contradicted by both fact and philosophy, to the assumption that by virtue of their maturity, adults can reason easily and correctly. This seems to us at least not proven. Is the human reason a special exception to the law that "exercise strengthens faculty?" How can one reason successfully upon difficult abstract mathematical questions who has not acquired the art by practice upon simpler questions? We should be glad to have the experience upon this point of teachers of high schools and other schools, whose classes sometimes contain a few members considerably above the average age of the class. Do they show themseves especially capable in those studies demanding skill in mathematical reasoning? Our own experience seems to point rather to the opposite conclusion. Then let children from the beginning use their reason as well as their memory, solve an abundance of *problems* as well as examples, and learn no general truths or principles which they do not understand well enough to illustrate.

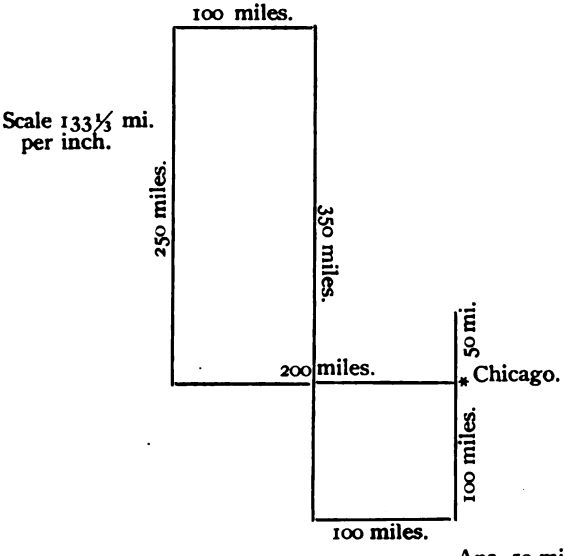
NOTES ON PROBLEMS.

Henry Buchta, a pupil in the seventh grade, second district school Milwaukee, sends the following suggestive solution of a problem that appeared in the April

JOURNAL, page 191. It happily illustrates the use of common sense methods in dealing with such problems, and the pupil who has worked out for himself such a diagram will not need to be told whether his answer or the one given in the book is correct.

I start from Chicago and go 200 miles due west, then 250 miles due north, then 100 miles due east, then 350 miles due south, then 100 miles due east, then 150 miles due north. In what direction, and how far away am I then from Chicago?

DIAGRAM OF ROUTE.



Ans. 50 miles north of Chicago.

The same writer makes the answer to the third question, page 191, one hundred dollars instead of one dollar.

Are there any further criticisms to be made on that page? It seems to be a good field to work in.

The following brief algebraic solution of the special problems presented in April JOURNAL, page 186, has been received from W. L. Morrison: "A board is 12 feet long, and one foot wide at one end and two feet wide at the other; required to divide it equally by a line parallel to the ends.

Let x = distance of line from the smaller end. As one side increases in width in the proportion of 1-24th to 1, then

$$x\left(1+\frac{1}{24}x\right)=9$$

$$x^2+24x=216$$

$$x^2+(\ )+144=360$$

$$x+12=18.97367$$

$$x=6.97367.$$

Using unknown quantities, C. V. Burnside arrives, by similar equations, at substantially the same results. It is worth noting that the algebraic solutions derive the fundamental equations by means of a proposition of geometry (about areas), while the geometrical solution given in April, uses the abstract propositions regarding ratio, which belong rather to algebra.

T. B. PRAY.

WHITEWATER, WIS.

OUR DRAWER.

SOME DEFINITIONS.

Will you not kindly give me the meaning of the follow words: riata, arastra? They occur in Swinton's Word Book, page 87, lesson 54, headed Spanish-American Words. The note under the heading is vexing. I gave the meaning of all the words except these two. In my Family Doctor, I find pemphigus, chemosis, and orditis, of which I also cannot find the meaning in books at my command.

C. F. G.

We have not the Word Book at hand, but suspect that there is an error in the forms given. *Riata* we know nothing of and we are not able to find it in our Spanish Dictionaries. *Arastra* perhaps should be *arrastre*, which is the Spanish name for a machine for crushing quartz in order to extract the ore. The quartz is laid upon a stone pavement and crushed by dragging large stones over it; hence the word, which comes from *arrastrar*, meaning to drag.

Pemphigus is Greek, and means a watery swelling or blister. *Chemosis*, an affection of the eye in which the conjunctive is elevated above the transparent cornea. *Orditis*: do not know the meaning.

TAMMANY.

Can you tell me what Tammany means, and where the word came from?

M. S.

We take the following from a little book called "Queer Questions." "Tammany was of the Delaware nation, and lived probably in the middle of the seventeenth century. He became a chief sachem of his tribe and was a friend of the whites. His rule was always discreet, and he endeavored to induce his followers to pursue agriculture and the arts of peace. His great motto was, "Unite in peace for happiness, in war for defence."

QUESTIONS FOR THE CURIOUS.

Why does a dog turn round several times before he lies down?

Why does the cracking of a whip make a noise?

How does pouring oil on the water calm the waves?

Why does the moon look flat?

CURIOSITY BOX.

I.—How many college boys can tell what kind of native timber will bear the heaviest burden, or why you take white oak for one part of a wagon and ash for another, and what timber will last longest under water? How many know sandstone from limestone, or iron from manganese? How many know which moves forward the faster, the top of a wheel or the bottom, as the wagon moves along the ground? How many know that a horse gets up before and a cow behind, and why? and that the cow eats grass from her and the horse to him? How many know that a surveyor's mark on a tree never gets any higher from the ground, or what tree bears fruit without bloom?—*Jeweler's Journal.*

II.—"THE MARBLE FAUN." "There was a question asked in a recent number of the *Journal* concerning *The Marble Faun.* Some time ago I met a gentleman who gave me an interesting interpretation of that story. He said that he had read it in a magazine published during Hawthorne's lifetime. He also told me, that he had heard that this article was more pleasing to Hawthorne than any other the author had seen on his story.

"The interpretation is this: Miriam represents the human soul; Hilda, the consence; Kenyon, the reason; Donatello, the animal nature; the old monk, temptation. Any one re-reading the book, with this interpretation in mind, will be pleased to see how well it fits the story."—*Evelyn S. Foster in N. E. Journal of Education.*

III.—ILLUSIONS OF THE EYE. Look at the letter S and the figure 8. The upper part seems to be almost of equal size with the lower. Thus: SSSSS, 88888. Now look at the same letters inverted and notice the optical illusion: SSSSS, 88888.

IV.—SHEARS OR PAIR OF SHEARS? Perhaps some of our readers are critical enough in the use of language to decide whether the customer or the clerk was right in the following dialogue:

Customer (to clerk in a hardware store)—"Show me a small, low-priced shears."

Clerk (facetiously)—"Perhaps you mean a pair of shears."

Customer (severely)—"I mean precisely what I said."

Clerk (defiantly, opening a specimen article)—"Are there not two blades here? and don't two make a pair?"

Customer (triumphantly)—"You have two legs, does that make you a pair of men?"

The shears were done up in profound silence.

Not to return one good office for another is inhuman; but to return evil for good is diabolical. There are too many even of this sort, who, the more they owe, the more they hate. There is nothing more dangerous than to oblige those people, for when they are conscious of not paying the debt, they wish the creditor out of the way.—*Seneca.*

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History of Wisconsin	M. M. S.		3 00	2 50
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ASSOCIATION RAILROAD RATES.

EDITOR WISCONSIN JOURNAL OF EDUCATION:

Rates and Ticketing to Meeting of Wisconsin Teachers' Association. — Teachers must buy and use July 5–6 a full fare ticket to or towards Milwaukee. On C., B. & N. R. R. and G. B., W. & St. P. R. R., to Junction and re-purchase at Junction to Milwaukee. In *each* purchase going, however, the passenger must demand from the agent selling the going ticket, a "receipt." At Milwaukee the undersigned will arrange with members of the Association to return them at one third fare on July 8–9 or till Sept. 10.

Rates to Milwaukee and to Chicago to the National Association.— Any person wishing to attend the meeting of the National Educational Association at Chicago, can purchase a ticket in Milwaukee to

Chicago and return July 5–12 for $2.55, by rail, or at $3.00, including berth and meals, by Goodrich steamers, and returning to Wisconsin homes from Chicago, the holders of railway return tickets issued on account of Wisconsin Teachers' Association and of the National Association, can arrange with the undersigned at the Exposition building in Chicago, to use return privileges by most direct route or bo the going route.

W. D. PARKER,
Railway Clerk, W. T. A.

Rates to National Educational Association at Chicago, July 12.—All tickets reading towards Chicago will be good July 6–13, and return tickets will be good July 15–18, or by special arrangement till 8th of September.

Teachers, members of teachers' families, reporters and editors of educational journals are entitled to these privileges, and should ask for ticket, "account National Educational Association."

Persons residing in Wisconsin, Minnesota, Dakota, Iowa, Kansas, Nebraska, Missouri and Western Illinois, and in territory of Grand Trunk Railway can buy *round trip* tickets to Chicago for fare one way plus $2.00.

Persons residing in Eastern Illinois, Indiana, Ohio and Michigan can buy round trip tickets to Chicago for fare one way. But must pay $2.00 N. E. A. fee in Chicago.

Persons residing East of Lake Erie and Ohio river, and South of Ohio river and East of Mississippi river must procure from J. H. Canfield, Lawrence, Kan., as many "certificates" as travelers; present "certificates" to local railway agents as orders for tickets to Chicago at one full fare; must take agent's endorsement of "certificate" and present same to me at Exposition building, Chicago, July 12–15; whereupon a return ticket over same lines will be sold at one third fare, and must pay $2.00 N. E. A. fee in Chicago.

All these tickets are *iron clad* contract: are therefore not transferable; are good for continuous passage only, each way; and are void for return unless stamped by me.

W. D. PARKER,
Supt. Transportation N. E. A.

Palmer House, Chicago, June 22, 1887.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

A BOY of fourteen said, the other day, to the master of a school, to whom he had been sent because of his misdemeanors, "I can be a good or bad boy, just as I choose; but my teacher is to blame part of the time. She lets her temper fly at times, and I fight back with the same weapons; and I always get beaten. If she would be patient, why, I would be, too; and it don't cost much for a teacher to say kind words. She snarls at all for the bad conduct of one or two, and that sets me against her."

DEFECT in manners is usually the defect of fine perceptions. Men are too coarsely made for the delicacy of beautiful carriage and customs. It is not quite sufficient to good breeding, a union of kindness and independence. We imperatively require a perception of, and a homage to beauty in our companions. — *Emerson.*

HEAT holidays are an established feature in German schools. When the thermometor reaches a certain point study must cease, in private as well as public schools. Basel, for instance, orders that when the thermometor at ten o'clock in the morning reaches 20° Reaumur school shall be dismissed till afternoon.

ARCHBISHOP Whately says, "Many men are saved by the deficiency of their memory from being spoiled by their education; for those who have a poor memory are driven to supply its place by thinking. If they do not remember a mathematical demonstration, they are driven to devise one. If they do not remember what Aristotle or Bacon said, they are driven to consider what they are likely to have said, or ought to have said."

THE *best genius God ever gave man is worthy purposes and hard work.* These words by Prof. Olney should be placed before the pupils of every school in the state. Call attention to them, talk of their import, study the life of the noble man who spoke them, and seek to have his spirit, as shown in the motto, be the ruling principle of our girls and boys. — *Moderator.*

EDUCATION is the knowledge of how to use the whole of one's self. Men are often like knives with many blades; they know how to open one, and only one; all the rest are buried in the handle, and they are no better than they would have been if they had been made with but one blade. Many men use but one or two faculties out of the score with which they are endowed. A man is educated who knows how to make a tool of every faculty — how to open it, how to keep it sharp, and how to apply it to all practical purposes.— *Henry Ward Beecher.*

SOME TEACHING DEVICES.

I. IN READING. — One dark rainy afternoon, when the spirit of unrest was uncomfortably active in the school-room, I hit upon a new device, which, for a

time, entirely banished the unwelcome intruder. I had upon my desk two new copies of a juvenile publication; the leaves had, until that afternoon, been uncut. I described its beauties to the children, and said, we would use it for a reader that day. I also said, I should select a child, who sat very still, to read first, and after that, I should choose for readers, those who were the most attentive. As I had two copies of the magazine, I was able to follow the reading and help the pupils in difficult places. The change in the moral atmosphere of the school-room was amusing as well as pleasing, for some of the children looked as if they were at the photographer's, having their pictures taken. I found this exercise also a great help in teaching the pupils to read at sight. — *Educator.*

II. I have found the game of letters very helpful in my school-room. I let one or two children take the box to form words with the letters, making this pleasure a reward for good conduct and good lessons. In this way several objects are secured, the child is stimulated to do well, and is rewarded for doing well in a way that is improving. I was looking at the words one of my little pupils had formed when a sister teacher came into the room, who told me of a better way to get letters for this purpose than by buying the game of letters. She had ordered some of a printer, and for two dollars had procured three hundred and fifty alphabets. So in her room the pleasure and profit was not limited to a few pupils. — *Exchange.*

III. School Post-offices. — There is too much careless letter-writing. Pupils need especial drill in this branch of composition, but writing letters to imaginary persons for composition practice is a spiritless exercise. A carefully supervised system of correspondence between the pupils of a school would be more useful, because more real and more enjoyable. Different plans may be tried. For instance, assign cities in different parts of the world to pupils and let their letters to each other be descriptive of the people, scenery, objects of interest, etc., of the places from which they are supposed to write. A school post-office may be carried on under rules similar to the following:

1. Mail distributed each morning.
2. Each letter written by one scholar to another must contain a question pertaining to some subject presented in some text-book used in the school.
3. The scholar receiving the letter must answer within one week from the time when received, and also state in his letter the number of mistakes found in the letter received.
4. Letters must contain no matter not pertaining to the school.
5. If scholars receive letters which they cannot answer, they may write and ask the teacher to assist them.
6. All written exercises given out in the classes must be directed to "The Teacher" and put in the office.
7. The postmaster will inform the school secretary of the number of letters distributed each morning, who will make a record of it in the school journal.

8. The teacher will claim the privilege of inspecting the letters at any time before distributing.

9. Each morning the postmaster will collect the letters distributed the day before and pass them to the teacher, who will correct and return them the next day.

10. The school secretary will make a record of the letters free from errors and also state by whom written.

11. Letters must be neatly written and properly directed.

12. The teacher would be pleased to correspond with any scholar upon any subject pertaining to his lesson to the school.— *Popular Educator.*

HUMORS OF THE SCHOOL ROOM.

—Take, for instance, the puns on principals. "Principals not men," is declared to be the motto of Auburn, where the ward schools are managed by women. "Your answer is wrong." "But the principle is right, isn't it?" "Yes, the principal is right, but the pupil is wrong."

—The schoolmaster is sometimes called a tutor and sometimes an ass; whereat someone remarks that an astuter man is seldom found. As a drove of mules passed the Capitol, Clay remarked to Webster, "There comes a crowd of your constituents." "Yes," was the reply, "they are going to Kentucky to teach school."

—One boy in Springfield, Mass., is so bright that he has got into the newspapers. The brightness consisted in asking his school teacher how far a procession of the Presidents of the United States would reach if they were placed in a row. When she gave it up he answered: "From Washington to Cleveland."

—The following letter was recently written to a Boston teacher "by a girl who is a pupil in one of the best taught schools In that city:" "I would Like to tell you what i hav learned about the ruminious the cow is a Domestic animal and the cow has four stumachs the cow is a domestic or tame animal. The cows eyes are made so that they can see back of themselves as well as forward and Sidewyas. the cow is found in every Country. The cows horns are made out of buttons and knife handles. The cow chew gress and vetuable. The cows skin is made out of beef. The cow is divid into three groups. The cow is the most useful animal the cow is a clothen foothed animal. Inside of the cow horn is a pith."

OUR BOOK TABLE.

ROSMINI ON METHOD.

THE RULING PRINCIPLE OF METHOD APPLIED TO EDUCATION, by Antonio Rosmini Serbati. Translated by Mrs. William Grey. Boston: D. C. Heath & Co.; 388 pp.; $1.75.

The author of this work was a man of the most devoted piety and irreproach-

able character, the founder of the order of the Institute of Brethren of Charity in the Roman Catholic church, known more generally as "the Rosminians," a patriot, and a philosopher of great acumen. He ranks among the foremost of modern Italian thinkers. The work is posthumous and incomplete. What was therefore intended to be an exhaustive study of the mental and moral development of a human being is in fact only a study of infancy, concluding with the fourth year. It is, however, the study of a genuine philosopher, who was not only deeply interested in pedagogical problems, but was also himself a teacher. He looks upon pedagogy as a branch of philosophy, and rests it immediately upon anthropology, psychology and ethics. Method is right when it conforms to the natural development of the human being, and consequently its first inquiry is what is the right and natural development of a human being? This inquiry Rosmini enters upon.

His method is essentially *a priori* and analytical. He does not proceed, after the manner of Perez, to gather the records of infant growth, and by comparing these to establish its order. On the contrary, he starts with the assumption that development is from the simple to the complex by aggregation and assimilation, and attempts to unfold in detail the logical and necessary order in which cognitions and character are built up. Thus, up to the close of the 4th year, at which period this fragment closes, he finds five distinct orders of cognitions manifesting themselves in the infant mind. "The formula," he tells us, "which expresses the method of teaching in general, and the ruling principle of method, is the following: Present to the mind of the child (and this applies to man in general), first, the objects which belong to the first order of cognitions; then those which belong to the second order; then those which belong to the third, and so on successively, taking care never to lead the child to a cognition of the second order without having ascertained that the mind has grasped those of the first order relative to it; and the same with regard to cognitions of third, fourth and other higher orders."

This passage clearly sets fourth the nature of the author's problem and the general plan for its treatment. Of the importance and the difficulty of it there can be no question. If it could be fully and satisfactorily answered we should have a firm and unassailable ground for a scientific pedagogy. To have seen this clearly fifty years ago, and to have made a vigorous and consistent effort to work out a solution, is the distinguishing merit of Rosmini in this department. His inquiry is patient, precise, logical and fairly exhaustive; and to any one capable of following out a philosophical analysis will be exceedingly suggestive and valuable. He will rise from the book with the feeling that here at length is a genuine scientific foundation for the practices of Pestalozzi and Froebel; and, whether he agrees with the author or not, he will at least have learned to think consistently and rationally upon fundamental problems of pedagogy. It is a genuine pleasure, in view of the multitude of light and superficial books on the science of education with which the market is now flooded, to find one of sterling merit, the work of a genuine philosopher.

— ELEMENTS OF BOTANY, illustrated by nearly five hundred engravings from drawings by the author, by Edson S. Bastin, (Chicago; G. P. Englehard & Co.; 282 pp.; $2.50,) aims to present the subject in the most convenient order for teaching. The author says very truly: "The logical arrangement of a mass of scientific facts is not necessarily the logical order of inculcating them. For example, a strictly logical order of treating the subject of plant structure would be to begin with the cell; then treat of the different kinds of tissues and tissue systems, and finally of the various organs, roots, stems, leaves, etc. But this order would certainly not be the best one for most beginners in botany." He accordingly begins with the organs of vegetation, which the student can readily study for himself, and after these simpler and more obvious things are understood, passes to vegetable histology and physiology. This right order of the presentation is supported by a very direct, simple, lucid style, accompanied with admirable engravings which have evidently been prepared with great skill and care. The "Practical Exercises" at the close of the chapters, which direct what to do and how to do it in the objective study of the subjects discussed, also seeem to us very valuable helps to pupils and teachers. The author has tried to make a work suited to the needs of high schools, academies and colleges of pharmacy; and in a well worked field has produced a book which, in our judgment, is entitled to favor strictly on its merits. We heartily commend it to the attention of teachers in this department.

— MIND STUDIES FOR YOUNG TEACHERS, by Jerome Allen, (E. L. Kellogg & Co.; 128 pp.; 30 cts.) seems to us a very curious book. It has a touch-and-go style of treatment which is at times dogmatic, at times flippant, but never consecutive and promotive of thought and insight. The author rightly says, "It is not a psychology — only an introduction to it, (*sic*) aiming to give some fundamental principles, together with something concerning the philosophy of education." "Some" and "something," in order to be valuable, should be carefully selected so as to form, in the pupil's mind, points of attachment for further definite knowledge; but we fail to discover any such definiteness of plan. More than that it seems to us full of errors and inaccuracies which would be a positive injury to the learner. For instance: "Memory retains all past ideas and perceptions in the mind. Recollection recalls them. Fancy takes old recollections, and modifies and compares them afresh." It would be hard to make, in the same space, more or more serious errors than occur here. But the book is full of such writing. After looking it over we turn to the preface and agree with the author that "little of mind science, that is of use to the teacher, can be learned by reading (such) books." Without the word in parenthesis, which we have thrust into the sentence, this seems to us entirely misleading — but not more so than much else in the book.

— THE ART OF READING LATIN, by William Gardner Hale, (Ginn & Co.; 74 pp.), contains an address delivered last year before the Associated Academic Principals of the State of New York, which awakened much interest among classical teachers. The author thinks that a Latin sentence should be read and

understood just as it stands. In translation it is dissected and re-arranged after the English order; but it is much simpler and wiser to learn to understand it as a Roman understood it. The student of this language, as the student of other languages, should acquire true reading power, so that he can take in and enjoy his authors as Romans, and thus get face to face with the men of the past. In this pamphlet he shows, in some detail, how it has been possible for him to accomplish this result with his classes.

—SPANISH IDIOMS, collected by Sarah Cary Becker and Federico Mora, (Ginn & Co.; 331 pp.; $2.00). The authors have been at great pains to make this book as full, accurate and convenient a manual of Spanish idoms as possible. Dictionaries, grammars, and literary work have been carefully ransacked, and notes of conversations perseveringly made, and the translations carefully studied. The idioms have, moreover, been fully indexed, the verb, where there is one, being made the base of the index, and where there is no verb the most important word of the phrase. It is essentially a book of reference, but one well nigh indespensable to those who care to master the Spanish language.

—STICKNEY'S THIRD READER (Ginn & Co., 328 pp.; 55c.) has two marked peculiarities, that it is in advance of ordinary texts of this grade and that it confines itself to narrative and poetry. We heartily agree with the author that current practice tends to make selections for this grade too easy. His book will awaken interest, and quicken taste for good form in literature, but we are not sure that it is wise to leave out all history, science and natural history — not certainly unless other books devoted to these are also supplied.

—INTER STATE PRIMER WORDS (50c.) is a box of ten pockets, each containing two pages of the Inter State Primer printed on card board in duplicates. The plan is to cut one up and let the child put it together again using the other as a model. The pockets are numbered and carefully graded, the words being chosen from the most popular books of this grade. (Inter State Publishing Co.)

—The Interstate Publishing Co. issue as supplementary reading the charming story from the German, THE STORY WITHOUT AN END; also PRIMARY FRIDAYS, No. 3, a really delightful collection of poems and recitations for the little ones.

—For primary schools perhaps no choicer collection of songs has been made than the SCHOOL SONGS of the Interstate Publishing Co.

—WENTWORTH AND HILL'S EXERCISE MANUALS — No. 1, ARITHMETIC, (Ginn & Co. 282 pp.; 55c.) presents a large variety of examples for drill work in arithmetic. They are mainly practical, similar to those which occur in ordinary business, and many of them give accurate and interesting information. Many teachers are calling for just such a book, and we know of none better to recommend to them.

—LITTLE FLOWER PEOPLE, by Gertrude E. Hale, (Ginn & Co.; 100 pp.; 50c.) shows a quick sympathy with nature, and a knowledge of young people. Its facts regarding plant life are not dry and forbidding, neither are they thin and diluted. A pleasing fancy transforms them all, so that human emotions play

about them, but they are yet exceedingly valuable and properly related to produce a scientific spirit. The book is beautifully illustrated, and very charming.

ANNOUNCEMENTS.—Ginn & Co., announce an *Ancient History* for schools and colleges, part I. by F. P. C. Myers, part II. by Prof. W. F. Allen of the University of Wisconsin. They will also publish this summer a thoroughly revised edition of Siever's Grammar of Old English, and Zupitza's *Elene*, edited by Prof. Henry Johnson of Bowdoin College. D. C. Heath & Co., announce *Notes on the Early Training of Children*, by Mrs. Frank Malleson, a book which has met with a warm reception in England. The same firm have become American agents for the London *Journal of Education*, the best of foreign educational periodicals; subscription $1.65 in advance. A. S. Barnes & Co. have in press a work on Analytical Mechanics, by Prof. W. G. Peck. It embraces the course as now taught at the School of Mines, Columbia College.

MAGAZINES AND PAMPHLETS.

—Two articles of unusual interest are found in the *Popular Science Monthly* for July. Hon. David A. Wells contributes the first of a series of papers on "The Economic Disburbances Since 1873;" and Mr. Stuart F. Weld presents much new and very interesting information regarding "The Panama Canal." Also of especial interest are Pres. White's new paper on "New Chapters in the Warfare of Science," and Mr. Romanes' "Mental Differences of Men and Women."

—In the July *Atlantic* Miss Guiney's charming reminiscences of old Portsmouth, called "The Water Ways of Old Portsmouth," will first attract the reader. Hardly less engaging is the sketch of "An Old Kentucky Home" and its inhabitants. Among other papers we mention also Mr. Scudder's "The Use of American Classics in School," and Miss Repplier's thoughtful essay on "The Decay of Sentiment."

—T. T. Munger, in the June *Century* enters a protest against the mechanicalizing tendency in our teaching, especially our examinations. Of them he says: "The whole affair is Chinese,—formal, childish, soulless. When education turns upon and is determined by an examination instead of daily and almost hourly contract with a wise, sympathetic, inspiring teacher, it provokes these irrational methods and defeats itself at every point." The article, entitled "Education and Social Progress," is very suggestive. The chapters of the Life of Lincoln are devoted to the Dred Scott case. The visit to Count Tolstoi and College Boat Racing are full of interest.

—The *Third Annual Report of the Industrial Educational Association* of New York shows the wonderful progress of the movement in the city, and contains the prospectus of a proposed college for the training of teachers for this work.

NEWS AND NOTES.

—Mark Twain's article in the *Century* Magazine ought to have been headed "English as she is *not* taught." The omission of the negative was as bad an error as any made by the children, and not half so easy to pardon.

—On reaching Chicago this summer do not fail to go to the Wisconsin head-quarters at the Tremont House and register. This will aid friends and acquaintances in finding you, and make the register more complete. There is no fee for registration.

—The Wisconsin Summer School for Teachers opens on Monday, July 18, and closes on Friday, August 12, making a session of four weeks. A good attendance is already assured. Board can readily be obtained, as nearly five hundred students are accommodated here during the session of the University. For the work in physics a model set of apparatus for high school work will be procured—such as can be obtained for a moderate sum—and teachers will be instructed how to use it in the most effective manner.

—The retirement of Pres. Bascom from the presidency of the State University at the last commencement is a move of much importance to the State. His administration of twelve years has been marked by great progress in all departments of the University, as well as by a steady growth in reputation and in the number of students in attendance. He leaves the institution in a most flourishing condition and with a brilliant future before it. At the Freshman elocutionary contest he was presented by the students with two large and beautiful etchings. In his acknowledgement of them he referred to one of the etchings in the following graceful and suggestive manner: "I needed no such token to recall you to mind as long as memory shall be true to any of her trusts, but on these favors, as on golden hinges, the doors of recollection will often and noiselessly open. Life will be touched anew with its own true sunshine—the love of men. From these frames, as from rifts in clouds, there will be "La Sortie" of joyful impressions—the flock of all spiritual thoughts."

—The new buildings at the University have been used during the past term for regular class work with the exception of Science Hall which is now enclosed and progressing rapidly towards completion. It is a very beautiful and substantial building, fire-proof and admirably arranged, and will prove a source of satisfaction to the State as well as to the institution.

—Pres. Albee, of Oshkosh Normal School, was recently pleasantly surprised, on the return of his birthday, by a present from his pupils of a remarque proof etching of Munkacsy's "Christ Before Pilate," and an easy chair. Supt. MacAllister of Philadelphia secured the etching, which is very rare, and accompanied it with a full description. The occasion was a very delightful one.

—From the River Falls Normal School Mrs. Louisa Parker leaves the primary department and Mrs. Jones the Normal. Mrs. Jones is to have charge of a private school to be established at Arena by some public spirited gentlemen.

—C. R. Showalter, of Cassville, opened last year a summer school for teachers. It was devoted to third grade branches and continued ten weeks. The results were so encour-

aging that he has prepared for another session this year and anticipates an enrollment of a hundred or more pupils.

—Miss Mary L. Avery, we are sorry to learn, is to leave her position as teacher of English in the Whitewater Normal School. She has accepted a place on the staff of the Century Dictionary, and her occupation and home will therefore be in New York. Miss Avery's work and influence at Whitewater have been highly valued by all who knew anything of the school, and her departure will be deeply regretted by students, teachers, and friends of the school.

—The DePere high school has added to its library and apparatus during the past year to the amount of $200. The course of study has been extended to four years.

—Superintendent Thayer has issued the Laws of 1887 relating to public schools in a neat pamphlet of twenty-seven pages.

—T. H. Kirk of the Winona Normal School has been elected Institute Conductor for the River Falls Normal, the place formerly occupied by State Supt. Thayer.

—Markham Academy, Milwaukee, has been purchased by Isaac Thomas, of New Haven and Cyrus F. Hill of Chicago. They are both old teachers and will make the Academy a first class training school for the best colleges.

—A new brick public school building is under construction at Fox Lake.

—The session of the National Council of Education opens at Chicago on Thursday, July 7. That of the Educacational Association runs from July 12 to 15.

—Readers will have discovered that in the program of the Wisconsin Teachers' Association printed in the last number of the JOURNAL, Wednesday, the day of meeting, is given as the 7th of July, whereas it is the 6th. An additional circular from President Anderson announces that "Arrangements are made whereby any person attending the meeting of the W. T. A. in Milwaukee, and ticketing by the method announced on the 4th page of the programme, will be afforded means when in Milwaukee, if he elects, to attend the meeting of the N. E. A. in Chicago, and return home directly from Chicago, on account of the N. E. A., getting advantage of all commutations announced for both meetings. Platteville people arriving at Chicago will be returned to their homes without going via Milwaukee. The M. L. S. & W. R. R. will sell tickets upon the same terms as those announced by other roads."

—The Alumni Association of the Whitewater Normal School will hold their annual meeting in Milwaukee the day before the meeting of the Wisconsin Teachers' Association. They will have a banquet at the Plankinton House July 5.

—Beloit college has this year abolished all class honors except the valedictory.

—The Milwaukee Normal School will next year provide a one year strictly professional course for thsoe who are prepared to profit by it.

—The Berlin high school graduated a class of nineteen this year; Elkhorn eight; Arcadia seven; Boscobel seven; Fort Atkinson seventeen; West Salem two.

—The *N. E. Journal of Education* says: "The summer schools are certainly the best means which have yet been devised for giving to the teacher in vacation time the opportunity for re-

gaining or increasing his physical health; for furnishing him the general or special culture of which he stands most in need for the refreshment or enrichment of his mental powers; and for that judicious mixing with his fellow-men which will warm nis blood, expand his human sympathies, and give him clearer and more sympathetic insight into the hearts of his pupils."

—The Temperance Text Book controversy in St. Paul resulted in a report from the committee, composed of the State Superintendent and the presidents of the Normal Schools, which severely censures the agent of the W. C. T. U. for his methods in attempting to secure the introduction of the Pathfinder Series, and in the omission of the series from the list recommended. The committee charge the agent with procuring an attack upon his books by the *Brewers' Gazette*, and then distributing the paper to make capital out of the article. They charge him also with "Shameful evasions, prevarications, self-contradictions and falsehoods." They say further, "This commission must, in view of the interests involved, confess their inability to reconcile Mrs. Hunt's advocacy of one book, and her methods of criticising other books, and her association with the agents of the Pathfinder publishers in working up a public sentiment, with her emphatic profession of pure philanthropy and entire disinterestedness;" referring to the further disingenuous manner in which she comments on the St. Louis edition of her own book, an edition "doctored" to suit the views of the liquor dealers. The whole matter is exceedingly unfortunate, and should impress upon those who endeavor to promote good cause the wisdom and necessity of applying the strictest canons of morality to the methods which they employ or endorse. It is not well, in the long run, to "fight the devil with fire."

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THE WISCONSIN TEACHERS' ASSOCIATION.

The thirty-fifth annual session of the Wisconsin Teachers' Association began in the assembly room of the high school at Milwaukee, July 6, '87, at 9:40 A. M. Supt. W. E. Anderson, of Milwaukee, president of the Association, delivered his annual address after which he appointed the following committees:

On Enrollment—Lewis Funk, Milwaukee; C. H. Keyes, Janesville; Mrs. A. R. Cooke, Whitewater.

On President's Address—A. R. Sprague, Racine; S. H. Romaine, Milwaukee; W. G. Clough, Portage.

On Resolutions—W. H. Brier, Baraboo; L. H. Peck, La Crosse; Prof. Leech, Kenosha.

On Honorary Members—Miss Charlotte Bergwall, Miss Margaret Conklin, and Prin. Walter Allen, all of Milwaukee.

Pres. Albert Salisbury, of the Whitewater Normal school, presented an ably written paper on the "Limitations of the Inductive Method." In the discussion that followed, Dr. Stearns said: We should be cautious, in educational discussions, to use well established terms with strict regard to their exact meaning. There is a tendency to use them loosely, which results only in confusion and misunderstanding. Induction and deduction are properly applied to forms of reasoning, the former proceeding from particular instances to general truths, the latter from general truths to their particular applications. Inductive is used, however, to designate the whole process which deals with concrete, particular things in the hope that the pupils will in them or through them come to see the general truths involved. Thus we may begin, as in grammar, by the general definition, and proceed to divide and define

until we come to a noun, or verb; or we may begin with recognizing classes of words, and then their inflections and relations, until we come to the general notion grammar. Induction may be involved in this, but is not descriptive of the whole process. Synthetic or constructive method is more applicable. Which is to be followed, synthetic or analytic, depends upon the acquirements and age of the pupil. The first notions must be obtained constructively or synthetically. The characteristic defect of the method is lack of unity. This the analytic secures. Its perfection of system favors retention of the whole, so that each part is summed up and and contained in its whole. This seeing of wholes, so as to see their parts in them, is an important part of mental training. No one is competent to teach a subject until he has known it in this way; and no one is properly trained who has has not acquired this habit. Moreover, when the pupil is ripe for it, this is the most rapid manner of acquisition. To take the other is debilitating, and a waste of time. The systematic study of language should be deferred until the pupil is prepared to take it reflectively and on the whole analytically. The synthetic and inductive order is the order of scientific investigation, and should be taught for discipline, but not as the universal method. Its application is limited outside of the natural sciences. Reference was made in the paper to the cultivation of memory. He agreed that the verbal memory was now neglected, as the natural result of the exaggerated importance attached to it in the past. It should be trained, but with its proper material. These are not rules and formulas. Such are to be seen as truths, and expressed in the pupil's own words, which secures accurate seeing and power of accurate expression. Verbal memory is best trained through committing passages of literature as nearly perfect in form as possible. They are priceless treasures, because they train the man all round,—his emotions, his love for perfection of form, as well as his perception of truth. Education must not proceed on the assumption that man is a clear, cold logic engine. He is a human soul —and must be moved and uplifted as well as instructed. So the pupil must be trained to see truth for himself and express it in his own way; and also to admire and repeat passages embodying lofty thought and emotion. Using the terms of logic tends to make education formal and logical, whereas it should be also and supremely human. He would give the perception of underlying truths, whether arrived at by induction or deduction. The teacher should be wide awake, receptive of

new ideas, conservative of old processes, holding to the old until something better can be used in its place.

WEDNESDAY, P. M.

The afternoon session was opened by A. R. Sprague, of Racine, with a paper on "English in our Schools." He made a strong, earnest plea for a thorough and comprehensive training in English Literature, to be commenced in the primary and carried on through all the grades. He made a strong argument for grading schools upon reading rather than arithmetic.

The paper was discussed by Prof. I. N. Stewart, of Appleton, and Prof. L. D. Harvey, of Oshkosh.

Prof. Stewart thought too much time was given to drill in language work without regard to the thought involved; that the present language teaching, in many instances, is a formal, not a productive method. The first thing to be sought is thought, then the expression of it.

Prof. Harvey recognized two mistakes. By the old method of "Grammar," definitions and rules were taught. In "Language Teaching," the other extreme, nothing is *learned*, everything is *developed*. There is no stopping to fix things in the mind, so the thought is lost. The purpose of language work should be to so train a child in school that he can read and write his mother tongue correctly and readily, and comprehend the thoughts of others. Rules and definitions are of use, because by them a child can criticise his own forms when away from his teacher.

Language lessons are sometimes aimless, but the lines of present work are more hopeful than many think, because definite aims are being reached by those who have the work in mind.

J. G. Skeels next presented a paper on "Reading Circle Work." He urged the value of the work when rightly pursued, but said that the present manner of conducting it was far short of desired results. He attributed it to the fact that principals remain away from Reading Circles, that too much work is being undertaken, and that most teachers fail to give the matter the attention it deserves.

Prof. O. E. Wells followed with a paper on "The Legal School Age." He advocated the establishment of the school age between the years of 6 and 18.

Prof. North agreed with Prof. Wells. He affirmed that no school

could do the work, and lay the foundation of such good character, as a farm where a child of 4 or 5 is left free to wander about, and allowed to form such conclusions as he pleases.

Birds, trees, plants, changes of seasons are adapted to growth, not only physically and intellectually, but in everything. He had made inquires at the State Industrial School and had found that, in the great majority of cases, the boys there had been sent to school at too early an age, and had, hence, acquired a distaste for school life.

Pres. Salisbury thought the question a physical one. When the child has reached an age when he is safe, physically, he is safe intellectually.

Serious injury often ensues from sending the child too young. He would make the primary school better. The neglect of the teacher is only perpetuated when we fence a child out of school.

Dr. Stearns reminded those present that the legal limitation was not a matter of *statute* but of *constitution*, a fact that increased the difficulty of effecting a change. He regarded it as cruelty amounting to torture, that children 4 years of age, should be subjected to the necessary discipline and confinement of the ordinary primary school. He wished it to be understood his remarks did not apply to kindergartens. He believed in supporting them. They were not primary schools.

Pres. Salisbury inquired the result of the attempt to secure a constitutional amendment.

Prof. Keyes then introduced the motion which was carried, to draft resolutions on the question of recommending a change of the school age.

The committee consisted of Dr. Stearns, Pres. Salisbury, Prof. North and Prof. Wells.

After a few railway notices, given by Prof. Hutton, the Association adjourned until evening.

WEDNESDAY EVENING.

Miss Rose C. Swart, of the Oshkosh State Normal, gave a very interesting address on "Woman's Work in Education;" after which, the teachers of the city gave a reception to visiting teachers. Music was provided and refreshments were served.

THURSDAY, 9:30 A. M.

The session was opened by singing.

Pres. Anderson named as committee on "Nominations," Professors

Reed and Jack and Supt. Nagle.

On Finance, to audit the treasurer's accounts and report at the winter meeting: Prof. W. J. Brier, of Baraboo; Miss Lucretia Moulton, of Milwaukee; L. H. Peck, of La Crosse.

Prof. North moved that Miss Swart's very interesting paper be published in the JOURNAL OF EDUCATION. Carried.

Prof. Hutton, chairman of the committee on Wisconsin exhibit at Chicago, reported the exhibit in place and that it was a good one. He recommended that a committee be appointed whose function should be to carefully examine the exhibit and report on the same at the Winter meeting. The recommendation was approved by the Association, and Dr. J. W. Stearns, Prof. Albert Hardy, H. C. Howland, Miss Etta Carl and Miss Margaret Conklin were appointed.

Prof. Hutton also recommended that a room be secured in the Capitol at Madison where the exhibit should be kept, when removed from Chicago, together with text-books, school apparatus, and school work that would show educational progress. It was decided that it be done if possible, and placed under the care of a committee, consisting of State Supt. J. B. Thayer, W. H. Beach and Dr. J. W. Stearns, of Madison; Prof. A. J. Hutton, of Platteville, and Prof. C. W. Keyes, of Janesville.

The report of the committee on "Science Teaching in the Elementary Schools" was given by Dr. J. Stearns, chairman.

Prof. Hutton concurred with the report, but found difficulty in getting capable teachers to carry out the plan proposed.

At present it was necessary to depend largely upon the manuals suggested by Dr. Stearns, hoping, in time, to have teachers trained to do scientific work in a scientific way. The work of children at first, must be observation.

Prof. Peckham agreed with the report. Under the topics, Where the subject of science should be introduced? What should be the matter? and, What the method? he affirmed the scientific work should be practical, and such a required the least effort of the pupil. The teacher should imbibe the spirit of the manuals, strive to carry out their purpose and wait patiently.

Prof. Rogers was impressed with the idea that our scientific age demanded instruction in the elements of science. The kindergarten was a recognized success and furnished the first elements in scientific educa-

tion, Good work was done in the high schools and University. The present aim was to supply the missing link between. The great difficulty arose from the lack of properly trained teachers. The teachers lacked the knawledge or a method of applying what knowledge they had. England and Germany have a Normal School of Science. He hoped in time we would have one here. He would like to see work done in descriptive Astromony, and more in Chemistry than the committee's report provided for.

Dr. Stearns quoted Supt. Harris, of St. Louis, in 1878, as comparing Science Teaching in Elementary Schools to a spiral. During the first three or four years of a child's school life, the first turn of the spiral is completed; the next few years the same subjects were taken up again on a broader scale, thus forming the second turn of the spiral.

Prof. Keyes thought the great difficulty of obtaining properly qualified teachers would be met, to some extent, by the Summer school at the University. He moved that the report be adopted and printed in the WISCONSIN JOURNAL OF EDUCATION. It was decided that 3,000 copies be printed in pamphlet form, for distribution among the teachers of the State.

The committee, having the work in charge consists of the Secretary and President of the Association and Dr. Stearns, the chairman of the committee.

The committee appointed to prepare resolutions on the change of school age, reported that, as in the opinion of the Association, the attendance of children 4 years of age, upon schools adapted to the needs of children from 6 to 8 years of age is not desirable and often results in physical and intellectual detriment, the Legislature be urged to bring about such a modification of the fundamental law, as shall make the lower limit of the school age in communities not maintaining a sub-primary or kindergarten, *6* instead of 4 years; attendance under that age being legal only by the permission of the local school board.

R. C. Spencer, of Milwaukee, had been alarmed at the contemplated action of Association, as it would tend to narrow the educational policy of the State. He felt that with all our progress, we are only on the threshold of the great question of education, and when we propose to put a limit on this question, we should be very cautious. The trouble is not with the constitution, but with our educational system. We should go to the Legislature, say our system is inadequate and have the

schools made what they should be for children of that age. He moved that the committee be enlarged and the matter re-referred to it to report at the meeting of the Association next winter.

Mr. Desmond in seconding the motion, favored deliberate action, and thought there was time for careful consideration, as the Legislature does not meet next winter.

Dr. Stearns agreed with Mr. Spencer that the resolution was far reaching in its results, but he did not think with him that it would effect the kindergarten. He thought if a resolution was adopted it would stimulate action for better provision for children below 6 years of age. He favored cutting up the evil root and branch, of sending babes to school.

Miss Conklin, of Milwaukee, thought there was no better way of reaching parents than by introducing a resolution before the next Legislature. If it causes warfare, well and good. The Association is not opposed to teaching children 4 years of age if they are properly provided for.

Mr. Desmond believed in agitation, and doing it by referring the resolution. The bill had been lost in Legislature by lack of interest.

Pres. Albee, of Oshkosh, also thought it was the school system, and not the constitution that was at fault. He feared a change might be felt as a relief instead of a spur in small localities.

The matter was finally re-referred, and the committee was enlarged. It consisted of the following: Dr. Stearns, of Madison; Prof. North, of Pewaukee; Pres. Salisbury, of Whitewater; Pres. Albee, of Oshkosh; Pres. Maple, of Milwaukee; Prins. Allen, Desmond, Miss Margaret Conklin, R. C. Spencer and W. E. Anderson, of Milwaukee.

THURSDAY P. M.

At two o'clock, by means of two pleasure steamers, a trip was made to White Fish Bay, where refreshments were served and a short session held.

The committee on President's address recommended the appointment of a committee to report at next winter's meeting, recommending the elimination of unnecessary work in the curriculum of graded schools.

The report was adopted and the following committee appointed: A. R. Sprague, Racine; L. D. Harvey, Oshkosh; J. J. Maple, Milwaukee.

The report of the committee on honorary members was adopted and the following made members of the Association for this year: Mayor Emil Walber; George Oberman, Pres. of city school board; Pres. Irwin Shepard, of Winona; C. H. Ham, of Chicago; W. H. Richardson and W. S. Johnson, of Milwaukee.

The committee on nominations reported the following for officers: Vice pesidents, A. J. Smith, of Pewaukee, Emily Webster, Margaret Conklin, of Milwaukee; Secretary, O. E. Wells, Appleton; Treasurer, E. G. Haylett, Sheboygan; Executive committee, W. E. Anderson, of Milwaukee, Albert Hardy, of La Crosse, W. H. Chandler, of Madison and E. C. Wiswall, of Prairie du Sac.

The Secretary was instructed to cast the ballot of the Association for their election.

An informal ballot was then taken for President, but resulted in no election. The time for returning to the city having arrived, the election was postponed until evening.

THURSDAY EVENING.

President Albert Salisbury, of the Whitewater Normal School, was elected President for the ensuing year.

C. H. Ham, of Chicago, delivered a lecture on "The Old and the New in Modern Education."

Pres. Anderson returned thanks to the Association for the opportunities its meetings had given the educators of Milwaukee, and announced the Association adjourned.

WASTE IN ELEMENTARY WORK.

ADDRESS OF THE PRESIDENT OF THE WISCONSIN TEACHERS' ASSOCIATION.

MEMBERS OF THE WISCONSIN TEACHERS' ASSOCIATION: In rising to address you this morning, I wish to disclaim all profession or intention of presenting new thought. Practical education is now treated so ably and exhaustively in publications where the restriction of time and space offer no hindrance, that he who endeavors to hold forth for a brief half hour to an intelligent audience, and succeed in throwing a few familiar principles into the pleasant and clear light of common sense, reason and experience, may well deserve our attention if not our

commendation. The aims of our association forbid me, as they have ny predecessor, from turning this opportunity into an occasion for the general and popular treatment of educational topics. I shall therefore ttempt to advance a few thoughts upon such topics as are or seem to ne to be at this time of vital interest to modern pedagogy, and which nay in discussion afford some tithe of good. There is not one of us ut comes here in the hope and with the purpose of trying his ideals nd practices by the serious and studious reflections of those who have een toiling at the same tasks, meeting the same difficulties and patient- y striving to reach a higher and more perfect attainment of the great ims of education.

Guided in the choice of my remarks by these considerations, I need nake no further apology for asking your attention once more to some houghts which come to me about the work of the common school and he everyday business of elementary education. I may find it in my vay to speak disparagingly of some practices that receive our sanction nd encouragement, but I beg you to believe that my intentions are not o criticize, but to mend. It is easy to find fault, and there are critics enough to point out defects but too few to suggest amendments. We nay be pardoned for growing restless under the loose generalizations of ublic opinion or the press. The free and easy philosopher who ever nd anon takes a brief perspective glance at the school from the ed- torial chair, and views with easy indifference the structure which the edagogue raises, brick on brick and stud on joist, sometimes frets us y confounding our scaffolding for with edifice. The layman whose ap- ointed business is to see that the work goes on as a whole—a suffi- ient number of workmen are employed—all are promptly and equit- bly paid and none are idle, may sometimes assume the role of builder, nd change the details of our plans, insist upon the discharge of this ourneyman and the employment of an apprentice on parts of the work pon which it is dangerous to employ any but trained and skillful hands. These things *must* be, so long as education is popular and under pop- lar control. Our only remedy is to educate our masters, not by ask- ng them to let us alone, not by setting up an indefeasible right for pro- essional judgment upon professional work; for that privilege would soon create an educational hierarchy more powerful to oppose progress and improvement than all the "isms" and "ishes" that designate the re- ligious ravings of mankind from the times of Memphis to those of

American Utah,—but by perfecting, ennobling, beautifying and strengthening the work till the grand purpose of the whole is seen in each element and line of the structure, and he who is disposed to meddle may perceive how much he mars the whole design. Let us remember then, that though we are subject to outside criticism there is still much *inside* unskillful work; and that lay thought—the free, shrewd opinion of an intelligent public—is the needed stimulating medium in which we are to develop a true system of practical education.

While I recognize that correction or amendment of prevailing school room practices ought to be tried on broad principles, the present opportunity is too limited to permit of extended examination and the application of fundamental principles to the practical business of teaching, and yet I am fain to believe that mistaken aims and unprofitable teaching are largely due to a want of a full and clear comprehension and analysis of principles. We can all agree with secretary Dickinson when he says: "If we desire to construct such a system of public instruction for the youth of the country as will best prepare them to discharge with efficiency and fidelity the duties of private and public life, let us make ample provision for the complete training of the powers of observation, for an accurate knowledge of facts, of analysis and comparison, for a knowledge of the relations of things, of generalization and reasoning, for a knowledge of those general truths from which the rules of conduct should be derived, and, above all these things for that training which leads to an all controlling love for truth."

Our difficulties and differences begin as soon as we set about the analysis of the general aims as here stated, and attempt to reduce the several members to doctrine and practice. "The complete training of the powers of observation"—how many comprehend what that may be made to signify in school room practice? Upon what things or objects shall observation be exercised in the training? "An accurate knowledge of facts"—what may that be made to define? what barbarisms and pretentions may it not defend? What are the facts an accurate knowledge of which should be obtained? "A knowledge of the relations of things." "Knowledge"—"relations" and "things"—three terms that suggest eternal differences of opinion and practice "a trinity of confusion." "Generalization and reasoning"—What employment of the mind where these operations are not carried on, and what courses of study or methods of instruction but what may claim in their

own way to satisfy this requirement? Again, take for example that word "power" to develop which we say is the aim of training and instruction. What may that signify to a young miss who is placed in the midst of fifty pupils with a syllabus in her hand, and behind her an experience of 15 weeks in hearing a daily class of twenty members in the model department—encouraged and assured by the training teacher whose shadow passes the threshold of the room at least once during every recitation. What is power? and what are the powers the kindergarten exercises and evokes? the primary school? the grammar school? How much we need light on these subjects,—a light that shall penetrate the school room, and not shine only from the lecturer's platform or the annual reports of the departments. How much there is need, on the part of teachers, of fuller, truer ideals and more accurate conception of what it means to educate a child.

I am aware that I utter what may be regarded as trite when I say that the various subjects of the curriculum are very apt to become an end in the teacher's conception of the business of educating, and that the requirements of the course and the standards or tests of promotion are frequently regarded as the principal aim of the class room work. That this is true we all know, but how many of us have the courage to look at the embalmed and sacred subjects that occupy so large a space in the curriculum, with a steadfast and determined resolve to form a fresh and independent judgment of the value of each separate task as an educating means. If the teacher is apt to confine her view of education to lesson learning on the part of the child, and on her part to questioning and examination, it is also true that others who have larger freedom are quite as illiberal and narrow. For example, it is taken for granted that a legitimate and necessary exercise throughout the elementary school, is language. When the pupil is supposed to be old enough Grammar is the name given to the exercises in that subject, and with it language is supposed to take care of itself. I am not quite certain but that all the language teaching—that incidental to reading, to spelling, the regular language lesson where efforts are made to teach sentence building and the use of words—all that goes under this name in the *first four years* of a child's schooling might be dropped without any real loss to children's best interests. The question yet to be settled, and which is too easily taken for granted now, is whether or not the mother tongue as studied in language lessons is a proper occupation, affords

the proper field of activity for the exercise of child thought when the development of power is the aim. I do not say that the lessons may not be made interesting, or that they may not be understood; but I mean to say it is just possible that the exercise may be estimated too highly, both in its supposed effects in reacting on the child's habits of speech, and as to its fitness as material for mental exercise. We may be placing a false, an undeserved value upon formal language teaching. Much of what is made the special attention of language lessons will teach itself,—does teach itself, so to speak. We do not build up real language power except we bring the child's mind into that activity wherein language is the medium of thought. When the child says what is this? and why is this? and what is this for? your answer is nothing to him as a series of words, but much to him as satisfying the desires of the intellect. He does not learn to talk by talking,—as we are apt to understand that expression—but he learns to talk by thinking about something, not about words but the underlying objects of sense or inquiry which are strange to him and with which he would fain become more familiar. Our error is but of the same kind as that of the teacher who supposes that the difficulties in the way of teaching a new branch are language difficulties, and who straightway direct her efforts to the mastery of the terms and definitions—the spelling of names, etc. "The subject is difficult," she says, "because the language is difficult," whereas the real difficulty arises in the strangeness of the knowledge.

But I have no intention to discuss language teaching, as that question has a special place upon our programme. My object in referring to it is to provoke the question as to how far language instruction as at present carried out, deserves a part on the primary school programme, and whether there are not employments for observation and thought which are better fitted to develop and enlarge the pupil's mental horizon and increase his powers—that is, educate him.

The teacher who by patience and tact has drilled the boy through a certain section of the course is fain to believe that all this steady work and presistent push for an immediate and definite end—say geography —is worth more than its real value. With her, geography, as defined and promulgated, lies in the year's work, which, being done, is supposed to educate. The difficulties of bringing the young mind into subjective familiarity with the text-book matter being surmounted, what is more natural than to confound required means with the true end?

Geography in the school room becomes *education* to the average teacher working with the ordinary standards of work and skill, and sometimes a very poor kind of geography or arithmetic or grammar usurps the place of that which should be the source and means of education. Think of spending hours in tracing hair line parallels about a crooked border called a coast—all very neat and proving how submissively painstaking a child may be made—to produce that which by no rational use of imagination can be conceived to resemble anything in heaven or earth. Geography as an educating means to the child stands as the name of the whole world of material environment, and yet it becomes partly a language exercise, partly an exercise in finger tracing, requiring him to burrow like a mole in the dark mold of old conventional school tasks, with a universe of sun, and spring, and flowers, and shade, and landscape but a few inches above his head. This branch of elementary training is one of the standards. It has taken deep root in the common school curriculum, and I might add has gone prolifically to seed.

As a young teacher, ambitious to emulate older ones, my first conception of its purpose and use was—that it is required: second,—acceding to established practice—that it represents and embraces a considerable amount of organized and tabulated information which all children ought to possess: third, that they are able to comprehend it, especially if parceled out in prescribed order as to facts and arrangement: fourth, that they ought to return the facts in oral or written answers according to questions. I was not particular about their giving the facts in their own words. It is not always safe or judicious to trust the facts of geography to original description. Perchance a glimmer of the real value of the subject might shine in upon me, and I might see in it a means to exercise a great power over the understanding and imagination, —the concept of the world—its varied surface of land and water,—their diversity of conditions due to conformation and unequal distribution of land and water, heat and moisture. But these are *big facts*, and, as the mind is slow to them, grasp formalism and verbalism is resorted to. What is the shape of the earth? what is an island? a promontory? a cape? a river? Madagascar is an island on the east coast of Africa—and so on through an unending iterative maze—for five years—getting the facts of geography, and getting nothing but facts. They begin to slip out of grasp after a time and

the "comprehensive" is put under the arm whose finger tips can scare reach the edge of the cover,—and map drawing, and locating, and bounding, and imports and exports;—(cotton, tobacco and maize,)—and (tobacco, corn and potatoes,) and (oats, flax, wheat and other small grain) are spun out in connection with what are called geographical facts of location.

I am not objecting to geography, but I aver that nine tenths of what is commonly taught as geography might be omitted without loss to the child; and further, that the processes by which this nine tenths is acquired (disposed of, is a better term) is deadening to the mind and occupies time and labor to the exclusion of really educating employment. I know it is said in behalf of the study that a vast amount of general information, and a valuable training of the memory is gained by the thoroughness that marks the geography lesson. It treats of commerce and manufactures, habits of the people, vegetation, mineral productions and climate. This is certainly an inviting series of topics, but the trouble is that we only treat these subjects nominally in the baldest verbal allusions, and but briefly in connection with some reference to locality; and further our treatment is so void of any method but such as only engages the verbal memory that there is not enough real educating exercises obtained from the contents of the text-book to make it worth one tenth of the time spent upon it.

Now let us turn our attention to another school room exercise—by far the most important in the curriculum. A brief examination of its treatment, of the methods of training in reading will show two things: first, that our methods are not yet characterized by a prevailing sense or conception of the real importance or true end of the training in this branch; and second, that in mastering the mechanical difficulties of the art we have made immense improvements during the past twenty years. Suppose we consider the ordinary way of teaching pupils in the second reader. The aim or desired results are indicated by these requirements: The pupil must spell and pronounce all the words correctly, must express in his own words (each child is supposed to have words of his own) the substance of the lesson (which is supposed to be in words not his own—and presumably in words to which he has no right except as spelling or defining exercises). Further, he must mark the vowel sounds of some words, make sentences with other words—(a horribly unnatural process, to make a child go angling for a thought

with a single new word for a bait,) and he must be sure to begin and end the sentence he catches with this new word in the proper way, using a capital letter, a period or other terminal mark. This is the commonly accepted aim of teaching the second reader — and this is formalism — not altogether useless and to some extent necessary, but formalism nevertheless. The real end, the end of reading for the sake of educating, is far simpler and is often attained long before the teacher and principal think the class ready for promotion. But formalism insists that the sacrifice is not ready for the altar of examination till a stipulated amount of diacritical marking, bad copying and the writing of hundreds of these words, treated as words merely, are torn from the only connection by which they evoke thought, — are listed, spelled, used in phonic drill and sentences — all for the sake of what is called thoroughness. And thus that good old word is perverted to represent a process of dry formalistic drill on literary signs. The reader as a means to the real end of education has served its purpose as soon as the child understands what he has read, and interprets the same with fluency and correct pronunciation. The supposed test of pronunciation is that he imitates the model of the teacher.

But we are making great improvements in this line of training. Think of the step from the old plan, — which placed the alphabet and the spelling book first and the reader second — to the introduction of the word method, — a little extreme but precisely the step to correct the dull stupidity of the a-b-c system of teaching. We halted a little when orthoepy was launched in teachers' institutes, but the diacritical craze spent itself like the whooping cough — the intervals between the paroxysms in the school programme becoming longer and longer, until at last the malady has subsided and, as heretofore, the children pronounce "English as She is Spoke" by the teacher, whether that eminent model speaks it correctly or not.

The era of supplementary reading will witness the clearing away of many of the formalistic tortures of the reading lesson, and will bring into the school room a more valuable practical interpretation of the end of the requirement — i. e. "to cultivate the power to get out of books what is in them" so well expressed to you in the address of a former president of this association.

Lack of time prevents any further allusion to the existence of formalistic practice and doctrine in the school room. I should like to devote

a few words to arithmetic, but I forbear, and we may await full developments from another quarter, as this branch has been called to account by General Walker, at Boston; and judging from the manner in which he has proceeded to analyze the practices of Boston school masters it is just possible that we shall have no arithmetic left, and may be able to reconstruct our system of teaching from Boston fragments and the unique relics of the present interesting controversy in that place.

So far, I have only been able to open a very broad question, the full treatment of which would require extended reference to the prevailing methods of instruction in all the branches of the common schools. Further, it would require that certain established formalities of the school room be examined as to their real or supposed value. And finally some approach to the real aim of such an inquiry would be reached by a discussion as to the relative and positive value of the subjects handled in elementary instruction. Whether there is not a great amount of formal elaboration — mistaken thoroughness — whether we make use of the proper material and means, and how far we err in mistaking the products of memory for the proofs of careful observation and understanding, are still open questions, which the deliberations of this assembly will deal with somewhat but which must be patiently, wisely and freely investigated before any great advance is made in the practical art and business of teaching in elementary schools.

My aim has been not to criticize but to examine, and to show the need of truer and larger views of education in carrying out the details of elementary instruction. I have endeavored in the short time permitted, to show the real obstacles to the gaining of higher conceptions of the aims of education as these obstacles exist only in school room practice. To understand our mission in advancing and improving the results of common school instruction, we, as an association, must work in two directions. We have not only to attain true doctrine, a just conception of what the province of school room teaching should include, but we must recognize the real obstacles we have to encounter in reducing doctrine to practice and methods. Now, this obstacle is formalism.

We may characterize this modern formalism as being a too conserving adherence to a prescribed line of subjects, which are supposed to be the essential and all important business of the elementary school, and in the treatment of which subjects there has grown a belief in certain

familiar mechanical and routine methods—methods which are acquired by imitation, at varience with correct principles of teaching, and without regard to the true aim of education. Formalism has trained us to believe in a restricted line of means and operations for school room exercises. Outside the most elementary work in the three r's it has expanded and elaborated our text books to include an amount of detail in each branch that impels the teacher towards verbalism and memory cramming—an amount of detail the mastery of which precludes the natural development of mental power and the acquisition of more valuable information.

We have much yet to learn of this great work of training and educating the young. The question of questions which we have yet to answer is "what knowledge and what training is of most worth?" and the sooner we can examine the subject without bringing in all the prejudices of tradition and the bias of our own school training and the existing and established curriculum, and enter the inquiry free and untrammeled by bias and habit, the better will it be for the great interests of popular education.

Wm. E. Anderson.

MILWAUKEE, WIS.

IN THE LIBRARY.—SCHOOL INSPECTION.—IV.

22. *Inspection of a Writing Lesson: Individual Instruction in Writing.*—To the writing lesson as given by the second year pupil-teacher, the supposition is that twelve minutes or so are allowed by the inspector. Of course, an inspector might well enough occupy a longer time; but, well employed, this will be found sufficient. How, then, does he employ it? To what does he principally look?

First, he looks to see whether the teacher has had his mind impressed with *the difference between examining and teaching*. The confusion is a very common one in teachers' minds on all subjects of instruction, but there is no subject in respect of which it is more common than writing. I have seen writing lessons given by certificated teachers (who certainly ought to have learnt better at their training colleges) in which the teachers did nothing more than go round the class behind the backs of the scholars and find fault with each individual boy's work in turn, never showing them how to do better, still less making the errors, and

the mode of correcting them, a matter of class instruction. The inspector will discover in two or three minutes whether the pupil-teacher has been so badly trained during his two years of apprenticeship that he does not know that he ought *to teach every boy to write as well as to examine how he does write.* He can in a very few minutes discover whether he knows what posture a scholar should adopt for writing, how he should sit to the desk, how he should hold the pen or pencil, and how place his book or slate. If he sees that the teacher is allowing a boy to work with a tiny piece of pencil as long as a thumb nail, or to sprawl over the desk with his left elbow across it, and his left ear resting on his arm, or to hold pen or pencil with the handle pointing away from him, or to raise his slate from the desk and hold it in his arm, he can very speedily put him down as either idle or untrained, and need not go further with the lesson. But if his first observation shows him that at least these grosser faults in the mechanical part of the lesson are avoided, he will then direct his attention to matters which require more thought and mental power.

One of the earliest questions, in regard to instruction in writing, in which the judgment and discretion of a teacher are brought into play, is the question *whether a child has progressed far enough in the use of the pencil to be fit to handle the pen.* This is a question which, in a thoroughly well-educated country, would be settled in the infant school. If the children went to school regularly, and if all schools were good, every child would have begun the use of the pen, and would have got over the first difficulties which accompany the manipulation of ink before leaving the infant school. But as this cannot be the case, the inspector will, in a boys' school, have to look and see whether any boy is writing with a pen who has not first been well drilled in the use of the pencil. And in taking his notes on this point, he will be judging the principal teacher quite as much as the pupil-teacher.

One of the next questions on which the teacher's judgment is exercised in teaching writing is *whether the scholar has advanced far enough in writing text hand to be fit to be instructed in small hand.* And another and most important matter for the inspector to note is *whether all the copybooks in the school contain copies in large as well as small-hand.* There are some schools in which the older boys write nothing in their copybooks but smallhand. This is a great mistake. So long as it is useful for a boy to write in a copybook at all, it is important

that he should write large as well as small hand. It is the large hand that gives the real grasp of the pen, makes the wrist and fingers supple, and enables the hand to follow with power and freedom the dictates of the brain and eye. If a boy's hand is formed, it is a waste of time to make him go on with a mere copybook: he should, for his writing lesson, be provided with a transcription book, and be set to write out extracts from standard authors, and other things that will be useful for him to refer to in after-life, when his school-days are over, and he has not the time or opportunity for going to a library. Or he should be set to compose letters and practise correspondence, to make *precis* and abstracts, and to practise other clerkly work which will connect his school training with the actual business of life, and increase his capacity as a wage-getter. But if his hand is not formed (and very few, in country schools, at any rate, are formed), he should have a copybook with three sizes of hands in it, and in which at least every third copy should be in large text-hand.

If the class which the pupil-teacher is taking is one which is to be presented in Standard I. or II. (New Code, 1876, see Appendix I.), the inspector will note carefully whether the instruction is directed to enabling the scholars *to pass from copying and transcription into dictation*. The proper way to instruct such a class is to go carefully through the alphabet; at each lesson forming a certain number of letters on the blackboard, and at the same time making the children note carefully how they are formed, shaped, or connected; then rubbing the copy out, and making them reproduce the letters, with the closest possible imitation of the style of their teacher, on their slates or copybooks, from dictation; then choosing a passage for transcription, which shall as much as possible reproduce the letters which have been the study of this and the preceding lesson; and, lastly, giving from dictation common words which illustrate the same or similar and analogous forms and combinations. All this, of course, requires thought, judgment, care, and, above all, previous preparation; and a pupil-teacher who has not prepared his writing lesson will break down before an inspector who knows his duty, and does it, just as much as in his reading lesson.

Another important matter which the inspector will note is *whether the teacher has any regular and systematic method of correcting the writing which is being done by his class*. Some teachers think that it is sufficient for this purpose if they go about through the class the

whole time of the writing lesson and correct each child's mistakes in turn. But this is a most inadequate way of effecting the desired purpose. It is insufficient for the bad writers, and wasteful of time and power for the good. Some children's books require to be looked at much oftener than those of others. Some may safely be allowed to write from four to six lines without correction; others cannot be trusted to write one line. Some are hasty, and require checking; others require hastening. It is, of course, well that a teacher should sometimes go round his class during a writing lesson, in order to enforce the proper holding of the pen, and to see from the best point of view how each boy is doing the mechanical part of his work. But this should not be done too much. The golden rule that a teacher should be before, and not among, his class, should always be violated as little as possible And a far better and more systematic way of correcting the books of a class, is to have a rule that *no boy may write more than a certain number of lines without standing up and turning round his copybook*, so as to show it, for correction. By this means, regular and systematic correction of the writing is secured, hasty writing is discouraged, merit is brought to the front, the teacher is forced to keep his attention fixed on his work, and matter for collective intstruction is more prominently suggested. The number of lines which may be written without being offered for correction may be increased to good and careful writers, and diminished to the careless or nervous. And thus the pupil-teacher will have his whole class well in hand; and, what is most important, the principal teacher, as he goes his ordinary rounds, will be able easily to see whether he is doing good work.

22. *Class Inspection in Writing.*—If satisfied on these, or some o these, points, the inspector will then look to see *how far the pupil-teacher is capable of giving class instruction* (as opposed to individual instruction) in writing; that is to say, whether he knows how to draw from the work of each boy, as he sees it in turn, general lessons of warning and illustration for the collective benefit of the whole class; or is merely capable of the far inferior art of correcting each individual boy separately.

Every teacher in giving a writing lesson, whether on slates or in copybooks, ought to have in front of his class, and in such a position that it can be seen by all, a black-board for the purpose of this class instruction. If the lesson is one on slates, from a copy set on a black-board,

the teacher should have before the class a second blackboard for that purpose. When he observes that any boy sits at the desk in an improper attitude, or is faulty in his mode of handling his pen or pencil, or of forming or shaping any given letter, or of connecting any letters together, or is too slow or too quick in writing, or has any tricks or undesirable habits, he should (of course without acrimony) call the attention of the whole class to such faults, and show them how they are to be avoided. Illustrating with his chalk on the black-board, he should show how each faulty letter is best formed, and how letters should be joined, and should make the class see, by actual comparison of examples of good and bad work on the board, what is the standard at which they should aim. If the inspector, standing by a writing lesson for five or six minutes during its course, hears no word of collective teaching addressed to the class, and sees no use made of the black-board, he will of course expect something defective in the pupil-teacher's training; and will either ask him whether he has prepared any collective instruction to be given on the copy-head which is being done by the class, or (at any rate, in the case of a third or fourth year pupil-teacher) will call upon him to comment orally, and with black-board illustrations, upon any defects which he has observed in the work of the class, or of any members of it. If no such collective instruction has been prepared, or the pupil-teacher, on being called upon, breaks down and shows want of training, the inspector will, of course, make this a matter of remark to the principal teacher, at the close of his inspection (see § 62). As one important part of this question, of the pupil-teacher's power to instruct his class as a whole, the inspector will look to see how far he has advanced in ability to write well on the black-board. This writing on the black-board is a distinct art from writing on paper at a desk, and pupil-teachers require special and careful training for it.

24. *Summary of Points in a Writing Lesson.*—To sum up, the following are briefly such points as an inspector will bear in mind, when inspecting the instruction in writing:

(1.) Does the pupil-teacher *teach*, or does he *examine* only?

(2.) Does he correct mechanical faults in the scholars?

(3.) Is any scholar working with a pen before he is fit to do so, or writing small hand before he is qualified to do so, or using a copy-book which has no large hand in it?

(4.) Is the work of the class *systematically* corrected, so as to regulate *pace*, as well as to test by results?

(5.) Can the teacher write well with chalk on the black-board?

(6.) Does he know how to give a class *collective instruction in writing?*

(7.) *Has he prepared his lesson?*

SELECTIONS.

AMERICAN CLASSICS IN SCHOOL.

Horace Scudder in the July Atlantic.

The deposit of nationality is in laws, institutions, art, character, and religion; but laws, institutions, character, and religion are expressed through art, and mainly through the art of letters. It is literature, therefore, that holds in precipitation the genius of the country, and the higher the form of literature, the more consummate the expression of that spirit which does not so much seek a materialization as it inevitably shapes itself in fitting form. Long may we read and ponder the life of Washington, yet fall back at last content upon those graphic lines of Lowell in Under the Old Elm, which cause the figure of the great American to outline itself upon the imagination with large and strong portraiture. The spirit of the orations of Webster and Benton, the whole history of the young giant poised in conscious strength before his triumphant struggle, one may catch in a breath in those glowing lines which end The Building of the Ship. The deep passion of the war for the Union may be overlooked in some formal study of battles and campaigns, but rises pure, strong, and flaming in the immortal Gettysburg speech.

It is this concentration in poetry and the more lofty prose which gives to literary art its preciousness as a symbol of human endeavor, and renders it the one essential and most serviceable means for keeping alive the smouldering coals of patriotism. It is the torch passed from one hand to another, signaling hope and warning; and the one place above all others where its light should be kindled is where the young are met together, in those American temples which the people have built in every town and village in the country. It may be doubted if any single voice did so much to stir young America into sympathy with the

Greeks in their rising for independence as Halleck's Marco Bozzaris, which was shouted from every schoolhouse in the land; and while older men in the North were discussing the bearings of Webster's Seventh of March speech. their boys were declaiming from the schoolhouse rostrum the magnificent burst at the close of Webster's second speech on Foot's resolution, ignorant that they were already hearing the trumpet-call which should lead them on to death for that Union which was Webster's highest inspiration. As men grow older they become interested in questions of government and politics, and are ready to make sacrifices of time and money to secure certain political results, in which their own individual interest is after all very slight and vague. This is practical patriotism, and, despite the pessimistic belief of those who are enlightened only by dramatic situations, it was never more at the command of the country than now. But it is not uncommon to hear from such practical patriots, especially when they remember the fervor of 1861, expressions of skepticism as to the continuous existence of the sentiment of patriotism. Of course so general a doubt may be answered by as general an affirmation, and we are no nearer the exact truth; but this is certain, that practical patriotism is by no means so dependent upon considerations of expediency and personal advantage, or even duty, as it is upon the undying sentiment of patriotism. As well might we say that practical religion rested only in a sense of duty. Its springs are in love of God; let these become dry and choked through the failure to hold conscious communion with him, and practical religion will be but a barren fig treee. Precisely thus, the sentiment of patriotism must be kept fresh and living in the hearts of the young through quick and immediate contact with the sources of that sentiment; and the most helpful means are those spiritual deposits of patriotism which we find in noble poetry and lofty prose, as communicated by men who have lived patriotic lives and been fed with coals from the altar.

I have written as if a prime advantage of making much of American classics in school lay in the power which this literature has of inspiring a noble love of country. But in the spiritual universe there are no fences, and the fields of patriotism and righteousness lie under the same stars. Righteousness transmuted into the terms of patriotism is the appeal from lower, material good to that which is higher and overarching. Now our schools, with their close relation to the business of life, demand a reinforcement on the side of spirituality. They have been more and

more secularized, and it will only be as the people become largely at one on religious matters that they can ever recover a distinctly religious character. Meanwhile, literature and music remain as great spiritualizing forces, and happily no theoretic differences serve to exclude them from the common schools. It is to literature that we must look for the substantial protection of the growing mind against an ignoble, material conception of life, and for the inspiring power which shall lift the nature into its rightful fellowship with whatsoever is noble, true, lovely, and of good report. Mr. Parsons, in his thoughtful, warning paper on The Decline of Duty,[1] strikes the keynote of our present peril when he says "A materialist civilization can never be a safe one." He does not point out the preservative forces, nor intimate very distinctly to what we are to look for a corrective of present tendencies; but in the same number of the journal containing his paper is a glimpse of a boyhood which leaves strongly impressed on the mind the figure of a "boy reading Plato, covered to his chin with a cloak, in a cold upper chamber." It is not so much in the story of that life that we are to seek for influences counteracting material greed as in words which have flowed from the lips of the man, whose boyhood knew privations. How many young minds have leapt at the words,

> "So nigh is grandeur to our dust,
> So near is God to man,
> When Duty whispers low, *Thou must*,
> The youth replies, *I can*"!

How many, also, have felt their pulses thrill with the exultant words of that declaration of independence,

> "Good-by, proud world! I'm going home"!

But how large an inheritance of spiritual power might such minds acquire, if the golden days of their youth were spent over the prose and poetry which embody a life of high endeavor and secret worship!

It is from the men and women bred on American soil that the fittest words come for the spiritual enrichment of American youth. I believe heartily in the advantage of enlarging one's horizon by taking in other climes and other ages, but first let us make sure of that great expansive power which lies close at hand. I am sure there never was a time or country when national education, under the guidance of national art and thought, was so possible as in America to-day. The organization of schools is practically complete; statutes and public sentiment have car-

[1] The Atlantic Monthly, May 1887.

ried it so far that an era of criticism has set in. Meanwhile, we have now for the first time a perspective of national literature. The rise of new men and new methods was needed to give the requisite fullness to our conception of the art of the older school; and as we move away from the dividing line of 1861, we are more clearly cognizant of that body of humane letters which was then inherently fixed, but needed the vista of a score of years to become defined and clearly marked to our eyes.

The real point of practical reform, however, is not in the preference of American authors to English, but in the careful concentration of the minds of boys and girls upon standard American literature, in opposition to a dissipation over a desultory and mechanical acquaintance with scraps from a variety of sources, good, bad, and indifferent. In a previous article on Nursery Classics in School,[1] I argued that there was a true economy in substituting the great books of that portion of the world's literature which represents the childhood of the world's mind for the thin, quickly forgotten, feeble imaginations of insignificant book-makers. There is an equally noble economy in engaging the child's mind, when it is passing out of an immature state into one of rational, intelligent appropriation of literature, upon such carefully chosen classic work as shall invigorate and deepen it. There is plenty of vagrancy in reading; the public libraries and cheap papers are abundantly able to satisfy the truant; but it ought to be recognized once for all that the schools are to train the mind into appreciation of literature, not to amuse it with idle diversion; to this end, the simplest and most direct method is to place before boys and girls for their regular task in reading, not scraps from this and that author, duly paragraphed and numbered, but a wisely selected series of works by men whom their country honors, and who have made their country worth living in.

The continuous reading of a classic is in itself a liberal education; the fragmentary reading of commonplace lessons in minor morals, such as make up much of our reading-books, is a pitiful waste of the growing mental powers. Even were our reading-books composed of choice selections from the highest literature, they would still miss the very great advantage which follows upon the steady growth of acquaintance with a sustained piece of literary art. I do not insist, of course, that Evangeline should be read at one session of the school, though it would be

[1] The Atlantic Monthly, June, 1887.

exceedingly helpful in training the powers of the mind if, after this poem had been read day by day for a few weeks, it were to be taken up first in its separate thirds, and then in an entire reading. What I claim is that the boy or girl who has read Evangeline through steadily has acquired a certain power in appropriating literature which is not to be had by reading a collection of minor poems,—the power of long-sustained attention and interest.

If we could substitute a full course of reading from the great American authors for a coure sin any existing graded series of readers, we should gain a further advantage in teaching children literature without frightening them with the vast spectre of literature. Moliere's doctor spoke prose all his life without discovering it, and children taught to read literature may escape the haunting sense that there is a serious, vague study known as literature, which has hand-books, and manuals, and vast dictionaries, and cyclopædias, and Heaven knows what mountains shutting it out from the view of ordinary mortals. There is a deal of mischief in teaching young people about literature and perhaps giving them occasional specimens, but all the while keeping them at a distance from the real thing.

The objection is sometimes made to this general scheme that the slow development of the mind requires the books for reading to be carefully graded, and a great deal of very minute attention has been given to securing an easy, natural, and progressive grade. It is, of course, apparent that a boy who has mastered only easy combinations of words cannot at once be set to reading Thoreau's Wild Apples, however keen may be his interest in practical experiments upon the subject of Thoreau's paper. Grading is necessary, and it is entirely possible to apply the principle to American classics for schools. Not literature made to order to suit certain states of the juvenile mind, but those parts of existing literature selected in a wise adjustment of means to end,—that is the solution of the problem of gradation. If Hawthorne's Wonder-Book is too hard, there are still simpler examples of Hawthorne's sympathetic prose. The body of wholesome, strong American literature is large enough to make it possible to keep boys and girls upon it from the time when they begin to recognize the element of authorship until they leave school, and it is varied and flexible enough to give employment to the mind in all its stages of development. Moreover, this literature is interesting, and is allied with interesting concerns; half the hard places

are overcome by the willing mind, and the boy who stumbles over some jejune lesson in his reading-book will run over a bit of genuine prose from Irving, which the school-book maker with his calipers pronounces too hard.

The American classics have little by little been making their way into schools, edging themselves in sometimes under the awkward title of Supplementary Reading, and there can be no doubt that every year will see them more securely intrenched. It is noticeable that the movement in this direction is corrective of a somewhat recent condition, and encouragement may be drawn from the comparatively short life of the graded reading-books. Men in middle life remember when these books first came into vogue; before that time the reading-books were made up of selections from standard English literature. Many a person has grateful recollection of these earlier books for the stimulus which they gave to a liking for fine literature, and certain passages in Shakespeare probably owe their celebrity less to the stage and less to the popularity of the plays in which they occur than to the fact that they have been read and delivered by millions of school-children. But with the great expansion of the school system, and especially with the rapid growth of cities, the organization of schools became a prime consideration, and with this organization came a rapid development of school-books on the side which most readily appeals to the systematizing and mechanical mind. Reading-books were finely graded, and to secure this supreme good of gradation the individuality of literature was subordinated. That was used which was most convenient and lent itself most readily to the all-important end of easy gradation.

We have gone quite far enough in the mechanical development of the common-school system. What we most need is the breath of life, and reading offers the noblest means for receiving and imparting this breath of life. The tendency of our schools is always toward an assimilation of the common life of the country, and there is no danger that they will not be practical enough. Arithmetic passes into the making out of bills and the calculation of interest. Writing gravitates toward business forms. Geography points to commercial enterprises. Reading finds its end in a Sunday newspaper. But the common life of the country has also its heroic, its ideal temper, and it is the business of those who have to do with schools to see to it that this side is not neglected. This requires thought, adaptation of means to end — organization. To secure

a just equilibrium, we need to use the great power of reading, and apply it to what is noble and inspiriting. The spiritual element in education in our common schools will be found to lie in reserve in literature, and, as I believe, most effectively in American literature.

EDITORIAL.

NOTES FROM THE NATIONAL ASSOCIATION.

1. ARRANGEMENTS AND MANAGEMENT. The attendance at the Chicago meetings far surpassed that at any former gathering of the Association. It was all that had been promised, and made a visible increase of the throngs upon the city streets. The extreme heat of the season affected even Chicago, and detracted much from the pleasure of the occasion. The management of the Association was vigorous and efficient. The voice of President Sheldon could be heard far beyond the range of that of most of the speakers, and his prompt and business like arrangements met with general commendation. The sharp limitation of the papers and debates contributed much to the interest of the meetings; for, however unpleasant it may be to a speaker to be held closely to a brief limit of time, it is uniformly agreeable to the listeners, who are relieved by a change. The papers also under such an arrangement are sure to be terser and more pointed.

The impossibility of providing general meetings for such a body as the National Association has become was made sufficiently apparent at Chicago. Very few speakers, and those only the most highly gifted and most constantly practiced, can successfully address ten or fifteen thousand people. The speakers at the exhibition building did not reach half the immense audience gathered to hear them. They could not do it. Under such circumstances, the strain upon speakers and listeners is severe and unprofitable. In fact, if these national gatherings are to be so large, it will be wise and necessary to abandon the general meeting, hold the gatherings in some hall where speakers can be heard, and provide overflow meetings at which the program is repeated. The "inspiration of a crowd" becomes depression under such conditions as prevailed at the Exposition Building.

THE RAILROAD ARRANGEMENTS caused very general discontent and vexation. The causes were chiefly three: 1. The refusal to allow agents to commence the work of stamping and certifying tickets before Tuesday morning. This prevented those who were early on the ground from dispatching these formalities, and caused an oppressive and weary throng to beset the secretaries all the subsequent days. 2. The process of stamping the tickets was made slow and tedious by the inquisitorial examination to which holders were subjected, and red-tape in the issuance of the tickets. A clarical force of one hundred and a

corresponding amount of space at the Exposition Building was necessary in order to carry out successfully so elaborate a scheme of examination as that provided for those who wished to avail themselves of the special rates advertised among the inducements to attend the Association. But after one had borne the burden and heat of the day at the railway secretary's counter he must make his way to still another crowd, and to still another counter, if he wanted to have his ticket prolonged so as to avail himself of excursion rates to other points. Here he must fix the very day of his return, and have his ticket taken away from him, marked good for the day specified only, and kept to be called for in Chicago on his return. 3. But still more vexatious was the limitation, not advertised beforehand, which made his return ticket not available until after the final meeting of the Association. This was a scandalous outrage—a device to prolong the sufferings of the throng as long as possible and then send them home in as great a crowd and as much discomfort as possible. We know of several who repudiate these conditions and now have in their pockets the return coupons, which they keep as memorials of the imposition, having purchased return tickets at the regular rates in order to be able to escape and fulfill their engagements. It is the first time that we have understood that it was necessary to be present from the beginning to the close of the meetings in order to be accounted a member in good standing of such a body. These arrangements were so annoying that many will hereafter be chary of the special rates offered as inducements to attend such gatherings.

THE COUNCIL MEETINGS. The discussions of this body were of average interest. It is not designed to be popular, and the attendance of those who are not members is usually quite limited. The dicussion of the relations of high schools and colleges was chiefly interesting as showing the great progress which is making in this matter all over the country. There is a manifest tendency of these two classes of institutions to approach each other, and to establish relations. The colleges are modifying their courses so as to meet the more practical courses of the high schools, and the schools, as the number of persons looking to college increases, seek more and more to extend their courses to meet the wants of these, and to meet the tests that the colleges set up. Thus the courses of both become more varied. At the east, where the high schools have grown up as the natural heads of the common school system and the colleges are almost exclusively denominational in origin and thus apart from the state system of instruction, this growth towards unity is more noteworthy, and explains the wish of the eastern men to connect the high schools in their historical developments with the old academies. The discussion of teachers' institutes was not fruitful. It seemed to show that we are not so near to clear views in this matter as its importance demands. The purpose of the institute does not seem well defined; and the questions much discussed in Wisconsin, should the instruction in them be academic or professional, should the institute last one week or more, how may the institute reach the community most effectively, etc., were debated in the council. The teacher's

tenure of office was also ineffectually debated. The desirability of more assured tenure was conceded, but how to secure this, except indirectly, by sweeping away legislation which stands in the way of it was not seen. Satisfactory growth in this direction in our large cities was noted, and the fact conceded that able men would not be induced to enter the profession save as greater stability of position was assured them. The paper on the Relation of Mental Labor to Physical Health, called forth an animated debate. It turned essentially on the assertion that the chief dangers to health result from our unnatural processes, which seek to compel the learner from without rather than to work in harmony with his nature. The discussion drifted to the desirability of securing symmetrical mental development, on which point it was manifest that wide diversity of view existed. The paper or report which introduced this discussion was a very able one.

THE GENERAL MEETINGS. The plan of dividing up the topic of a general meeting among several speakers, each to discuss one phase of it, worked well, securing unity of theme and diversity of treatment. The papers in general were pointed and the discussions which followed them profitable. The first and fourth sessions seem to to have proved especially interesting. The latter was devoted to the relation of the university, college, and higher technological schools to the system of public instruction, and papers of the Presidents Angell, Strong and Hopkins, and Professers McBride and Tomlinson were very suggestive.

THE EXHIBIT. The Exposition Building was well filled with school work, and we do not remember ever to have seen a larger or more satisfactory collection. It was, of course, mainly from the West, and from three States, Illinois, Wisconsin and Indiana. These States had large space allotted to them on the main floor, and presented varied and well arranged samples of work from all grades and kinds of schools. Other States were less largely represented, but in the galleries was a very extensive and interesting display from the East. Some general features seem to us worthy of special comment. Tendencies reveal themselves in such exhibits. We were impresses with the extent to which modeling is developing in the schools. Samples of the work were to be found in all parts of the building, coming from all sorts of schools. Apparently the Normal schools lead off in this, but many city schools in various grades, art schools, schools for the deaf, the blind, industrial schools and so on showed work of this sort. Work in colors seems to be gaining an entrance at both ends of the system, although, apparently, not to a large extent as yet. In the high schools it belongs to the training in art, but in the primary grades is used purely as a means of cultivating the color sense and taste, and augmenting the interest of the children in graphics. Will the movement spread and justify itself as an element of general education? Drawing, of course, is everywhere, and is firmly established. It is making its way into the district schools, having conquored those of the cities and villages. There are tendencies observable in this work. The aim is, on the whole, as it ought to be, industrial, but mechanical

drawing, or drawing for mechanical construction seems to be gaining. Object drawing also in the lower grades appears to be gaining upon the practice of copying, so generally relied upon in the beginning heretofore. It is certainly higher and more rational work, and demands more skill on the part of the teachers. It is satisfactory to note also the tendency to turn drawing to account in other branches of study, especially in the natural sciences. In Botany, Physics and Physiology especially the practice may be said to have become quite general. More and more these drawings, especially in Botany, seem to be made directly from the objects instead of from the engravings in the text-books. In some instances we noticed that these illustrative drawings were said to have been made directly from objects by pupils who had received no previous training in drawing. The results were certainly creditable, and the practice may be worth the attention of teachers who have supposed success impossible under such conditions.

The exhibit of industrial products from the common school was not large, indeed was very meagre, and left the impression, which probably corresponds pretty closely to the fact that as yet the public schools have attempted very little in this line. The display of wood work from the Eau Claire schools was the most extensive and interesting public school work in this line which we observed. Examination papers were abundant, and of course of various grades of excellence. A careful report upon these might be made both interesting and profitable. An ingenious person might from them prepare a companion piece to Mark Twain's "English as She is Taught," which might be appropriately named after the style of that paper "Examination as She is Conducted." Questions could easily be culled quite as inept and amusing as the now famous answers of pupils, and more significant and instructve. If pains were taken to classify these questions, so as to show the prevalent errors of examiners, the essay would be a valuable contribution to our studies on the Art of Teaching. What egregious errors in this work of examination are made, not only by teachers, but by superintendents and other officers! Indeed, unless our customs are changed so that examinations will play a much less important roll in our affairs than they do at present — and we see no reason to expect such a change — there is imperative necessity that we all, teachers and superintendents, diligently and thoroughly study the art of examining.

We shall take some other occasion to speak more at length of the Wisconsin exhibit. This was large and very creditable. The absence of anything from Milwaukee, and many other prominent cities, and the State University, was regretted, but notwithstanding this the State has reason to be well satisfied with what was done. The Normal Schools at Platteville, Whitewater and Oshkosh ; the School for the Blind, that for the Deaf, and the two Industrial Schools, made excellent exhibits. Calumet, Sheboygan and Sauk counties sent large and instructive displays. We have heard the opinion expressed that Sauk county sent, on the whole, the most satisfactory county exhibit in the exposition. The cities of Janesville, Whitewater, Marinette, Fond du Lac, Eau Claire, Fort Atkinson,

Rhinelander, and others, were also admirably represented. We were especially glad to see the county exhibits, containing as they did samples of the work of the country schools, and showing that the spirit of progress and self-help was developing among them. Some of the means of instruction and illustration made in and for these schools seemed to us exceedingly suggestive of possibilities in this line when we shall have secured competent and wide-awake teachers for the country schools. The Wisconsin exhibit is, we understand, to be set up in the Milwaukee Exposition this fall, and we hope that many teachers of this State will be able to examine it there.

GENERAL NOTES. More than one teacher has said to us, "owing to the railroad ticket arrangements I was not able to do much at the National Association but look over the exhibit, but this paid me for the trip."—The distributors of circulars and papers, and the sellers of pencil-sharpeners and other trifles were kept from the public halls, to the great satisfaction of those who wished to enjoy the meetings.—The Association seems to have made a favorable impression upon the Metropolis of the west, if we may judge from the comments of the daily press. The size of the gathering commanded attention, and the dignity, reputation and ability of many of the leaders seem to have repressed in some measure the flippancy of the reporters. The usual stale jokes about "the school-marms" were of course indulged in, but the meetings were well reported and the comment upon them was encouraging.—Aaron Gove, of Colorado, was elected president of the Association for the coming year. It is probable that the meeting next year will be held in San Francisco.

THE meeting of the Wisconsin Teachers' Association in Milwaukee this summer was both very enjoyable and profitable. The arrangements made by the teachers of Milwaukee for the reception and entertainment of the Association were well planned and carried out; a social gathering with refreshments was provided for the first evening—a most agreeable innovation upon the practices of late years, which was heartily appreciated and enjoyed by their guests—and an excursion upon the lake for the second afternoon. The presence of so large a body of the city teachers at the sessions was also an agreeable feature of the occasion. The papers and discussions were practical and animated, and the interest as great as usual, notwithstanding that the national gathering was so near at hand and destined to be so much larger and more absorbing. An account of the debates will be found elsewhere in this number, and we shall hope to lay some of the more important papers before our readers soon.

MAY we not reasonably hope that the election of women as school officers will soon go so far as to give them a place on our rural school boards, and that the indifference, inefficiency, narrowness, and stagnation which now characterize these boards generally will be removed or overcome through this means? Certainly there are strong reasons why women should have a place on school boards. They know more about children than men do, because they are in

more intimate communion with them. In nine cases out of ten the management of young children falls almost exclusively to the mother, and this fact, together with her natural affection, makes her a better judge of their needs than the father. In the schoolroom she will know better than he can whether the management is rationally adapted to the nature of the children, and whether the instruction meets and helps them. It may be stated as a rule that, both by nature and by experience, the mother is better fitted to judge of a school than the father. There is a further reason which should long ago have attracted attention. The great body of our teachers are ladies. The great body—yes, it will soon be correct to say almost all, if present tendencies go on unchecked. Within fifty years teaching has passed from the hands of men into the hands of women. Whether this is on the whole a gain or loss, it is not our present purpose to enquire. The fact cannot be disputed. It follows that women as a body are more and more becoming acquainted with teaching by practical experience, and men, on the other hand, are, as a body, becoming less and less acquainted with teaching in this way. Any community will furnish evidence of this fact. Far more women than men will be found in it who have experience in school, and the disproportion is increasing instead of diminishing. This constitutes a distinct and cogent reason why women should be given a place on school boards. There is a further reason to be adduced. The men who are elected to school office neglect their duties more uniformly than any other class of officers in the country. The reason is not far to seek. They receive no pay for these services and can gain no political advantage from the faithful discharge of them, unless it be in the way of cutting down expenses, and experience shows the baleful effects of this sort of activity on the part of officers who know nothing about schools. The correction of this state of things must come from the election of officers who do know something about schools, who have a genuine interest in them, and who because of this will give them the time and attention necessary to make them really efficient. On the whole are not such persons more readily found among women than men? The reasons then for believing that the election of women to school boards are the following: 1. Because they are by nature better adapted to caring for the young than the men. 2. Because their duties as mothers tend to still further develop this fitness. 3. Because a much larger number of them in every community than of the men have had experience in teaching. 4. Because they are freer from political influences than the men and more likely to give such duties the requisite time and attention.

MR. MUNGER tells us in the June number of the *Century Magazine:* "When education turns upon and is determined by an examination instead of daily and almost hourly contact with a wise, sympathetic and inspiring teacher, it provokes these irrational methods and defeats itself at almost every point. It has not even the excellencies of the military drill, for a soldier learns the manual, however unwillingly he goes through it, but a student left largely with his text-

book—the teacher, a rarely appearing phantom, except at examinations, where he sits clothed in the black robes of Rhadamanthus to determine if the cramming has been efficient,—this is neither drill nor education, but is rather akin to the commercial processes in which the young men will soon be engaged—a process of rapid inflation and soon following disgorgement." We do not fear that this gopel of inspiration in teaching will be too much or too strongly preached. After your science and methods of teaching have been made the most of it still remains true that the personality and power of teacher are the main thing; and if it were possible to have in the chair of teacher at all times a man or woman of superior attainments and character this would be the most desirable thing. Teaching in the highest sense is not a mechanical art. It is the uplifting and inspiring power of a superior nature, and affords opportunity for the exercise of the highest gifts. But it is necessary to guard against letting this truth stand so as to shut us off from seeing others. The examination, for example, is not therefore to be condemned as necessarily mechanicalizing. It also may be vitalizing, as all other real helps to know and measure ourselves may be. The point that Mr. Munger emphasises is not the negative one, that examinations may be mechanicalizing, but the positive one, that all true education is vitalizing, consists in reaching the spirit of the pupil, shaping his ideals, guiding his desires, so that through it he enters upon a larger life. When we shall have come to see this clearly, to act upon it, it will not be necessary to give up examinations, but they will be truly subordinate to the real ends of teaching. Cutting out practices of whatever sort will not reform our schools and colleges. This will be accomplished by dwelling upon the ideal of education until this becomes clear and powerful enough in us to shape our practices. We do not grow by negations.

OUR DRAWER.

A DEFINITION.

DEAR SIR:—"C. F. G." in the July JOURNAL OF EDUCATION, page 336, has evidently been puzzled by a typographical error. "Orditis" is evidently meant to be Orchitis, from Orchis, testis, and itis, inflammation, a not unusual metastatic manifestation in mumps. W. F. B.

THINGS TO THINK ABOUT.

With what mode of fertilization is irregularity in the flower associated?
How is the cross-fertilization secured in Indian corn?
What is the so-called "Sulphur Shower"?
By what means do blue violets spread so rapidly?
How are nutgalls, may-apples and the like produced?
In what family of plants are sieves found?

Who invented decimal fractions?

Why is buckwheat so called?

What is the Golden Number of a year, and how determined?

What is the origin of the phrase, "To speak for Buncomb"?

Why is it not painful to thrust a pin into the flesh just above the knee?

Why will a blow on the stomach sometimes stop the heart beating?

When an injury to the nose has been remedied by transplanting skin from the forehead, why is a touch to the former felt in the latter?

OUR BOOK TABLE.

EDUCATIONAL MOSAICS.

EDUCATIONAL MOSAICS, by Gen. Thomas J. Morgan. Silver, Rogers & Co., Boston; 274 pp.

An examination of this book gives a much higher opinion of its value than a knowledge of its plan suggests. The title is well chosen. Brief passages relating to education taken from the writings of more than two hundred authors are here brought together, without note or comment, and without any effort to make the Mosaic a systematic treatment of the subject or subjects. The extracts rarely reach two pages in length, and are often but a few lines. They are gathered from all sorts of sources, names little known appearing beside those of acknowledged masters in literature. Most of them are from writers upon education, but not a few are the incidental touches given to this topic of universal interest and relations while their authors were engaged upon other themes. The book is therefore suggestive and inspiring, rather than philosophical. Its many-sidedness is its merit. The same thought reflected from diffierent minds is differently suggestive, has different shades of meaning. Then too, the different sides of the same question are presented. Charles Francis Adams' vigorous assault upon the college fetich is followed, after some pages, by Prof. Felton's Eulogy of the Greek Tongue; Parker's Exhortation to Learn by Doing is balanced by Payne's Plea For Brains Before Muscle; a plea for manual training finds its correlate in a defence of culture. It is therefore a variegated mosaic, a book to be caught up from time to time for its chance suggestions, or to be referred to for opinions and quotations. Such use of it is greatly facilitated by its indexes. Of these there are two—the first a table of contents and the second an alphabetical index of authors. Another is needed—an alphabetical index of subjects. The volume is beautifully printed and bound, and is just the book to lie upon the teacher's table for constant consultation.

—TWILIGHT THOUGHTS, by Mary S. Claude, with an introduction by Matthew Arnold, (Ginn & Co., 104 pp.,) is in many respects an ideal child's book

—and the best of us never cease to be children so far that the simple beauty, and pathos, and love of nature in these stories fail to charm and refine us. Mr. Arnold suggests that "the soul of Northern Europe, of the Germany of Jean Paul Richter, of the Denmark of Hans Christian Andersen," is in their author. There are fifteen of the stories, and of these the Bramble's Story, the Notice to Trespassers, and the Plant in the Tool House, have most pleased us. Natural scenery, the flowers, birds, and brooks, are invested with human sympathies and become teachers of the truest and deepest human feelings in these tales. The book is edited by Miss Mary L. Avery, recently of the Whitewater Normal School.

—THE STUDY OF RHETORIC, by John F. Genung, is the last issue in D. C. Heath & Co.'s Monographs on Education. The author sees approaching a revival of interest in the teaching of Rhetoric in the Colleges, and discusses in what way the study can be made more useful than it has been. His suggestions are excellent, but none of them seems to us so pertinent as this: "Good writing is taught fully as much by communicating an impulse, kindling a love for literature, inducing an author's attitude, as by teaching and criticising details of composition."

—FUNFTES' DEUTSCHES LESEBUCH, (Van Antwerp, Bragg & Co.,) is the final book in this admirable series of German Readers for school use. It is in plan and execution like the familiar reading books of our schools, except that the selections are from German instead of English classic authors. Especially noteworthy are the brief sketches of literary history scattered through the book at regular intervals, which, taken together, make a suggestive outline of the literary development of the nation. The plan might profitably be adopted by the makers of readers for American children. The exercises in German composition at the close of the volume are also admirably planned.

—THE HOUSE I LIVE IN, (Van Antwerp, Bragg & Co., 96 pp.,) is a very simple primer of Hygiene, adapted to the instruction of very young children. The matter is well selected, told in an interesting manner, and illustrated by appropriate anecdotes and examples. It seems to us an excellent solution of the questions, how and what shall we teach in this subject to primary children.

—GILMAN'S HISTORICAL READERS, Nos. 1, 2 and 3, (Interstate Publishing Co., 36, 48, and 60 cts.,) present, in a most engaging form, the history of our country for young readers. The author is well well known for his literary skill, and he has thought his work important enough to consult original authorities in its preparation and to bestow great pains upon the selection of his material. The result is an admirable, simple and interesting narrative, giving a clear outline of the history of this country, exhibiting the causes and results rather than the minute details, and dwelling upon the most essential points, so as to give clear views of the progress of events. The books have also been carefully graded as readers, and each volume covers an important and distinct period, as the titles sufficiently indicate: The discovery and exploration of America; the colonization of America; the making of the nation. We heartily commend the

books to the attention of teachers, and endorse the plan of giving the child his first introduction to history through the reading class, rather than through the formal recitation.

—PRACTICAL RHETORIC AND COMPOSITION, by Albert N. Raub, (Raub & Co., Philadelphia; 320 pp., $1.20,) aims to be not only a manual of rhetorical theory but also a practical drill book for developing skill in the application of the principles learned. There are really three parts of the treatise. The first discusses capital letters, punctuation, and letter-writing; the second rhetoric; the third composition. But what is practical rhetoric, if it is not composition? will naturally be asked. Really the distinction is trivial. What we find under that head are the usual directions as to invention, the parts of a composition, and the kinds of composition. Of most of these directions we are inclined to say that an ounce of mother wit is worth more than a pound of doctrine. In the book before us very little space is given to this department, while much is devoted to examples and exercises in diction, and the study of figurative language. The exercises are in general well devised and valuable. But the text is too dogmatic in form, and too completely divided up into recitable portions to be suggestive and inspiring, as we should prefer to have a book on rhetoric—there are few such.

—SHELDON'S ELEMENTS OF ALGEBRA, (Sheldon & Co. 364 pp.,) covers all the topics usually treated in elementary algebras, and is so planned that, by the addition of further topics at the close of the book, a complete algebra will be produced. This the publishers promise the present summer. The book is not simply a revised edition of a former publication, but is a new work upon a new plan. The chief characteristics of the plan will be found to be these: The systematic treatment of algebra, in the beginning, as literal arithmetic; the great simplicity of the treatment; and the liberal supply of examples properly graded. General demonstrations have been entirely omitted from the earlier part, as unnecessary and unprofitable to the beginner; and throughout lengthy and unnecessary explanations have been excluded. On the other hand, rationalizing of processes has been sought through the analogies of arithmetic. The progress of the learner will be thus more easy, and perhaps he will learn as well to reason algebraically as by the more common methods—of this experience must be the test.

—ADVANCED GRAMMAR AND ELEMENTS OF RHETORIC, by Calvin Patterson, (Sheldon & Co., 399 pp.,) contains a tolerably full presentation of the principles of English Grammar with abundant illustrative exercises. It is designed for high school classes, and its treatment errs, if at all, on the side of fullness. Somewhat more than fifty pages at the close are devoted to a concise treatment of the elementary principles of rhetoric.

—C. W. Bardeen, Syracuse, N. Y., issues in a small pamphlet the recommendations and course of course in SCIENCE FOR ELEMENTARY SCHOOLS, prepared by Dr. Wm. T. Harris, for the St. Louis schools, and contained in his report as superintendent for the year 1871, and again in 1879. The interest and

value of this report have been generally conceded, and its publication in this cheap and convenient form is timely.

—MANUAL OF PENMANSHIP, by A. Persing, (25c.,) gives a rambling talk on penmanship, in the course of which the author explains his theory of the movements and lines used in writing. His plan is exceedingly simple, as indeed, is the subject to which it relates, and much more talk and theorizing on it is prevalent than the subject requires or justifies.

—We have received the FORTY-FIFTH ANNUAL REPORT OF THE BOARD OF EDUCATION OF THE CITY OF NEW YORK. This statement by the city superintennent arrests attention: "A large part of our pupils hear no English, or at most a very limited or faulty English, at home. The one fact that four fifths of the inhabitants of this city are of foreign parentage, is sufficiently indicative in in this connection."

—ANNOUNCEMENTS.—Ginn & Co. announce "A Practical Rhetoric," by John F. Genung, which will be simple, original, and practical. Also, a revised edition of D. H. Montgomery's Leading Facts of English History, a very admirable compendium. Also a treatise on Plane Surveying, by Daniel Carhart. D. C. Heath & Co. announce Industrial Instruction, by Robert Seidel, of Mollis, Switzerland.

A BUNCH OF SPECIAL MONTHLIES.

Small monthlies devoted to special subjects are multiplying, and evidently have found a public interested in them. Is not the reading of such journals a natural and useful way of keeping up with a hobby? The lover of gardening and flowers will find *Vick's Illustrated Monthly*, Rochester, N. Y., always fresh, varied and useful. We know of no means of keeping up with flower gardening in all its phases to be preferred to this monthly; $1.— *Civics* is the organ of the American Institute of Civics, taking the place of the *Citizen*. It contains fifty-six pages, and discusses topics connected with the Philosophy and Teaching of Government; 83 Cedar street, N. Y.; $1.— *The Swiss Cross* is a successful endeavor to make a scientific magazine for young people. Its articles are varied and entertaining, never descending to childishness while well adapted to interest and instruct intelligent and wide awake boys twelve years of age and upwards. It is up with the times, and full of fresh information. $1.50; N. D. C. Hodges, New York.— *The Home and School Supplement* grew out of *The School Supplement*, which aimed to supply exercises and helps for the school room, such as all elementary teachers want and like to find already prepared to their hands. This feature has been retained, and the magazine enlarged to include lectures, essays, biographies, and sketches, with hints for home life; $1.50.— *Dress* is a new candidate for public favor. It is "Devoted to the Practical and Beautiful in Women's and Children's Clothing," and is edited by Annie Jenness Miller. The name of the editor sufficiently represents the ideas of reform to which the monthly is devoted, and the three numbers already issued indicate that it will

present a variety of useful and suggestive articles pertaining to dress and home adornments; $1.50.— *Queries* has for its special feature the publication of carefully prepared questions in various departments of history, literature and science, and in a subsequent number the answers to these. Besides this it gives an agreeable literary miscellany, and collections of brief and pithy extracts from distinguished authors, devoting to one author the space given to this feature in a single issue. It is a bright and progressive publication; $1.— *Grammar School* is the title of a monthly magazine of instructive reading for children of this grade, published by the Interstate Publishing Co. It is designed for supplementary reading in schools, and presents stories, adventures, science and poetry by some of the very best and most successful writers for the young. A very charming and instructive miscellany; $1.— *The Academy* is a journal of secondary education. It gives thoughtful and vigorous discussions of topics pertain to the work of academies and high schools. The June number contains papers on Latin Philology and the Teaching Latin; Is Classical Education Practical? Some Famous Schools; Is Volapuk a Dead Language? The Legitimate Duty of a Principal; etc. Geo. A. Bacon, Syracuse, N. Y.; $1.

NEWS AND NOTES.

—A pleasant time is anticipated at Platteville on the 11th inst., when a reception will be given to Hon. J. L. Pickard by his old pupils at the academy in that city. There will be a banquet and social gathering, at which reminiscenses of the old times will be indulged in and former acquaintances renewed.

—At the examination for admission to the bar in this state, held in Milwaukee early in July, fourteen of the twenty-four applicants passed the tests satisfactorily. This is a large percentage, only about one third of the candidates having usually been successful.

—Miss Margaret Conklin, of Milwaukee, has been appointed teacher of Geography in the Whitewater Normal school. Miss Conklin was for some years Critic of Practice Work in this school, and will therefore return to a familiar field. Miss Sarah E. Whittaker, formerly teacher in the Minnesota State Normal school at Winona, and lately from Cornell University, has been appointed teacher of the English Language and Literature in the Whitewater Normal school.

—The death of Miss Mary Delaney, at Whitewater, July 21, will bring sadness to many readers of the JOURNAL. It cannot come as a complete surprise to any. The pupils and teachers who have had the privilege of knowing her of late years as a teacher in the Normal School have watched with sorrow and admiration the brave struggle which she has maintained with an insideous disease, meeting all her duties with scrupulous exactness when her physical strength seemed hardly adequate for them, and always bright and cheerful even under the most depressing circumstances. It was a brave fight, and it was bravely ended. The year's work was fully done; the last stroke was

made, the record complete, all things in order,— and then came rest. She has been connected with the Normal School since its foundation, having graduated in the third class and immediately become a teacher in it. This position she held for fifteen years, discharging its duties with rare acceptance. Her influence was an inspiration to the young people who entered her classes; her skill as a teacher, the rare disinterestedness of her life, her thoughtfulness of others, impressing themselves upon every one. She lived not for herself but for others—for her aged father and her brothers, and then for that larger circle of young people which met her daily in the class-room. She has left her impress upon them—an ideal in their lives and a memory which they will cherish.

—The Board of Normal Regents at their meeting this summer voted to discontinue the arrangement by which Prof. Andrews was employed as teacher of Gymnastics for the Normal schools of the State, and instead to allow each school a small sum to be used in maintaining physical training in it. At Oshkosh a special teacher in this department has been employed during the past year, and paid by the students, whom the few weeks given them by Prof. Andrews failed to satisfy. It is to be hoped that the present move will not result in the neglect of this matter in the other schools, but rather in its more continuous and systematic development. Out from the Normal schools will go influences into all parts of the State; and the necessity of physical culture is not at present sufficiently appreciated by teachers. How many stooping forms and shambling gaits, how many hollow chests and feeble constitutions might be cured or improved in the public schools if teachers knew the importance of attending to these things in youth, and what to do to remedy them.

—Mr. Herbert Jacobs becomes principal of public schools at Evansville; Mr. Hogan at Rice Lake; Mr. Gettle at Edgerton; Mr. A. W. Burton goes from Merrillan to River Falls; Mr. Dudgeon from Hudson to Menomonie; Mr. C.A. Hutchins, formerly of Fond du Lac, goes to Beloit; Mr. C. A. Goggin to De Pere; Mr. G. W. Witter to West De Pere; Mr. A. P. Delaney to Columbus.

—Forty-nine institues are provided for in this State this fall, and they all come between the eighth of August and the twenty-sixth of September. This necessitates the employment as leaders of twenty conductors, besides the regular one from thes Normal schools, and of many others as assistants. All the superintendents press to have their institute before the opening of the schools, and thus crowd them together. We question the wisdom of the arrangement. It ought to be possible to hold institutes through October, and the later ones would have the double advantage of cooler weather and closer proximity to the time of school work. Moreover, it would be possible to send the regular conductors to a larger number if the season were thus prolonged. Is it true that the country schools begin the first of October as a general rule? And, further, is it true that the institutes are so slightly appreciated in Wisconsin that they cannot be held in term time, as they are in other States? We do not think this is true, but that practice has been drifting to the concentration in the summer months, which is neither necessary nor desirable. Shall we have a change?

—A new school building is in process of erection in the Sixth ward in La Crosse, which is to be 67x40 feet and

to contain four school rooms. The arrangements for heating and ventilation will be of the most approved kind.

— The Manitowoc *Pilot* says: "School boards are becoming extreemely cautious about engaging teachers not holding certificates valid for the terms they intend to teach. Having been possessor of a certificate does not satisfy them. This is praiseworthy caution and should be a hint to teachers to attend those examinations held sometime before the school year opens. School boards are also very largely fixing wages on the grades of certificate. Another stept in the right direction."

— A new school building is to be erected immediately in the Tenth ward in Janesville. It is much needed, the old building being inadequate to the needs of the ward and in an unsafe condition.

— The rules of the Portage School Board prohibit the employment of any person as teacher in the city schools who has not had at least three terms experience in teaching.

— The New England *Journal of Education* comments thus upon the educational exhibit at Chicago: "We had thought ourselves reasonably familiar with the work in industrial art and its affiliating branches, but we confess astonishment at the revelation here made by attainments of the art teachers through the common school teachers, notably in the Chicago primary and grammar schools, in St. Louis, Columbus, Worcester, and Moline, and with many of the results in the University of Illinois, the State Normal University, Cook County Normal School, Indianapolis, and the Wisconsin Normal schools, while the average work in every Chicago school, in every Cook County school, in most of the county schools of Illinois and Wisconsin, is of exceptional merit. When one realizes that this wealth of beauty is the harmonious blending of the results from many sections of the country, under varied supervision; that it is the fruit of teaching which has quickened thought, inspired skill in designing; that it has matured the art of weaving thought and design with pen and crayon, in clay and plaster, in wood, tin, and iron; he can but feel that the American school room has taken great strides from the aimless, spiritless, and senseless lining and coloring of other days to the systematic and artistic development of power in observing, sketching, and modeling from nature."

— State Superintendent Thayer has issued, in an 18 page pamphlet, the list of books recommended by him for public-school libraries in this state, and published in the last number of the JOURNAL. These are intended for the use of school officers who are charged with the execution of the law. By the law the purchases are to be made in July, and the Superintendent says: "It is desirable that the selections and purchases be made at as early a date as practicable, that the books may be labelled, recorded, and distributed to the districts by the first of September."

— The second annual circular of the Normal school in Milwaukee shows an enrollment of forty-seven in the Normal department and one hundred and forty-four in the model school. It contains the following announcement: "For teachers of experience, principals of village schools, county superintendents, or college students who can pass a thorough and searching examination in all of the work of the junior year except psychology and the discussion of methods, a course of one year is planned which will embrace the work of senior year and the studies excepted above. It will require ability and physical vigor to do this successfully."

—Supt. Severin, of Calumet County, says in his circular to School District Boards: "My experience, with teachers from other counties, has led me to deem it best for the interest of our schools not to endorse certificates from other counties, though authorized by a law of 1887."

—The summer school at Madison is now in session, with an excellent attendance and much interest. The laboratories are open all day and are freely used by the teachers. Most of the class work comes in the morning from eight to one o'clock. The astronomical observatory was opened to the teachers in attendance, who have had an opportunity of looking at the heavens through the great equatorial. President Chamberlin has directed the teachers in the study of local geology, and awakened much interest in the subject. His lectures on surface geology as related to geography have also proved very interesting and profitable. Many of the teachers have also availed themselves of the opportunity to visit the Monona Assembly, especially when the program offered features of more than usual interest. The names of those in attendance are as follows: C. R. Pickering, Muscoda; Dwight Kinney, Black River Falls; Hattie Merrill, Milwaukee; May M. Lakin, Milwaukee; Anna E. Anderson, Ft. Howard; I. N. Stewart, Appleton; Isabella Welch, Milwaukee; Charlotte Bergwall, Milwaukee; Lilias Steele, Milwaukee; Fred Meisnest, Branch; J. F, Sims, Colby; Joseph Freehof, Sigel; T. H. Lage, Pepin; Jessie C. Wilson, La Crosse; A. W. Smith, Wauwatosa; C. J. Caldwell, River Falls; W. S. Sweet, Beaver Dam; Henry D. Hesse, Milwaukee; E. D. Hopson, Eagle; C. F. Cronk, Stoughton; C. D. Kipp, Alma; G. S. Parker, Janesville; George E. Keyes, Janesville; W. R. Hemenway, La Crosse; M. E. Terry, Cambridge; H. F. Wieman, Jefferson; Nancy M. Davis, Oshkosh; Sophie E. Davis, Winneconne; L. E. Gettle, Edgerton; L. C. Wooster, Eureka, Kansas; J. E. Hoyt, Lodi; J. M. Holzinger, Winona, Minn.; G. E. Culver, Vermillion, Da.; J. H. Terry, Lake Mills; O. E. Wells, Appleton; C. E. Lineburger, Evanston, Ills.; C. A. Chrisler, Eau Claire; H. B. Tidd, Brooklyn; Lucretia Scarborough, Appleton; C. A. Goggin, De Pere.

—Several Circulars of County Superintendents are before us. They agree in urging the adoption of the course of study, in calling attention to the condition of the school premises, in recommending the purchase of suitable apparatus, and in reciting attention to recent school legislation.

—Supt. Hoskins, of Jackson County, says: "In securing your teacher exercise great care. Examine the certificate. A limited certificate means poor scholarship. A certificate of low grade means indifferent scholarship. Your cordial co-operation is absolutely estential those improvement of our schools. The incentive to secure a higher grade of certificate and a better standing must come largely from a promise of increased remuneration for superior qualifications. The schools owe no unqualified person a living. An examination is not retro-active. A certificate cannot legally be dated back to cover time taught previous to the examination. Hire no person who does not hold an unexpired certificate for the entire time taught. If the certificate will expire during the term, see that it is renewed in time. A frequent change of teachers is seriously detrimental to the progress of a school."

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THE LIMITATIONS OF THE INDUCTIVE METHOD.

The air is full of talk about a new education, *the* "new education." Not a few men and women and a few journals have accepted it as their mission to preach this "new" education as a saving gospel. And these all seem to proceed upon the assumption that the new education is not a reform so much as a revolution, that it is not an outgrowth or evolution from the old, but something radically antogonistic to it, and to wholly supersede it. This assumption is seen in the vituperation so freely showered upon all that is old, in the sweeping depreciation of "second-hand" knowledge, and the courageous assault upon "words" as a snare and an obstruction, a "means of preventing thought."

Whether we turn to the fiery phillipics of Col. Parker or the enthusiastic assumptions of Mr. C. H. Ham, or the solemn pages of Secretary Dickinson, we are confronted with this wholesale exaltation of a wonderful new philosophy of education or, at least, of educational method. The vigor and confidence of these new crusaders is so effective, and mankind is so fond of novelty and large promises, that the whole world seems to be going out after them; and the catch-words of the new doctrine are being glibly turned on the tongues of many who have but the most superficial comprehension of the ideas for which they should stand. And one of these catch-words is "the inductive method." The great triumphs of the inductive method of reasoning and investigation during the past century have thrown a glamour over the very word *inductive*, and one scarcely dares to challenge its claims when carried outside the domain of logic into that of pedagogy.

But the mere institution, by this Association, of a committee to re-

port on the "Limitations of the Inductive Method" is one of many signs that there remain some, at least, who are not wholly bound by the spell of these phrases, and who feel that it is time to subject them to a closer analysis and to seek the true scope and boundaries of inductive presentation. It could not have been expected that so difficult a task would be actually and safely accomplished by this committee, but only that they should present some rough foundation from which full and careful discussion should set forth. This, at least, the committee regard as their function; and while they may speak with some positiveness, they yet will offer nothing as a finality even in their own minds.

First, then, what *is* the inductive method? Some sort of definition is essential to any clearness of understanding in discussion. If we adhere closely to the meaning of the phrase as used in logic, we shall conclude that inductive teaching or presentation is that which proceeds always from particulars to universals, from specific facts to general truths and principles, offering no definition, rule, or formula until it has been derived from the pupil's own observation and experience. The deductive method, *per contra*, starts with definitions and rules, with broad generalizations, which it proceeds to reduce by the process of logical division, dropping down thus from universals to particulars. This is the method to which the great majority of text-books and systematic treatises conform.

The inductive method, starting in observation, has little need of text-books, and discards all authority except that of one's own faculties. The deductive method puts forth its generalizations as by authority, and proceeds later by illustration and application to vindicate their truth.

The term "inductive method," however, has come to have a wider, or rather a looser, application in pedagogy, and is often confused with terms by no means synonymous. Since all induction involves an analysis of the observed facts—for there can be no abstraction without analysis—it has been sometimes assumed that all of induction is analytic, and the terms "inductive method" and "analytic method" are used interchangeably, as frequently an opposite and equal error is committed by interchanging the terms inductive and synthetic; whereas, true induction employs now analysis and now synthesis.

Again, the fact that induction begins with observation and comparison, and that so often of material things and their relations, has led to the interchange of the terms "objective" and "inductive," that which is

incidental being identified with that which is essential. And so the terms "analytic method," "objective method," "developing method," and "inductive method," because of their close affinity and frequent coincidence, are tossed about indiscriminately; and all alike are seized upon as the watchwords of "the new education." Especially is everything in the way of presentation that is concrete, that starts with sense-perception rather than the reason, that rests upon experiment rather than reflection, categoried under the inductive method, no matter how often deduction is called in to help out or shorten the processes.

Since, however, there can be no precision or certainty of conclusion in the discussion of terms used so loosely, it would seem wise to use the word *inductive* in the stricter interpretation, as applied to the method by which sciences have been discovered and built up, as opposed to that by which they are systematically set forth, the "method of discovery" as opposed to the "method of doctrine."

We are not charged with the defence of this method; yet we must promptly concede its great value, even as an instrument of instruction. Even those who reject, in its full application, the specious generalization of Condillac, made more famous by Spencer, that the genesis of knowledge in the individual should follow that of the race, must still admit that there is a certain degree of correspondence between the two, at least in the earlier acquisitions of the child. And no one who has given the matter much thought can hesitate to accept the proposition which Dr. White lays down as his 5th Principle of Education, viz.: "The primary concepts and ideas in every branch of knowledge must be taught objectively in all grades of school." In other words, there are in every branch of knowledge certain fundamental ideas which can only be possessed through observation and experience.

Place with this that other principle, "The mind acquires knowledge and power only through its own activity," and we have two important items which must always be entered to the credit of the inductive method: 1, that, more than any other, *it secures clearness of apprehension* on the part of the pupil; 2, that, more than any other, *it insures an active state of mind* in the pupil.

These things are true even of the modified, hybridized form in which the method is usually applied — for a purely inductive method is seldom witnessed in actual instruction. There is no thorough induction by the pupil. The teacher places before him, directly or indirectly, a few facts

carefully selected and arranged, and then *induces him*, by skillful questioning, *to make a guess* at the law governing the whole class of facts, and clinches the lucky guess by endorsing it as correct. The fact that the pupil makes, whether sooner or later, the lucky guess is clear proof that he has seen the few facts in their proper light and sees the general principles in its application to them; though no logician would accept this as genuine induction.

But granting, heartily, the validity and superior value, within large limits, of what is called inductive teaching, it is still lawful for us to challenge the assumption, not seldom voiced in these days, that it is the *only* valid and valuable method of teaching, that its field is the *whole* field of education.

The limitations of the inductive method may be considered as of two sorts or classes, its *logical* limitations arising from the nature of the knowledge to be taught, and *practical* limitations arising from the environment or the general nature of things.

Under the first head we recognize the fact that there are certain branches of knowledge which by their very nature and origin forbid the inductive method of presentation. We see that induction can, at best, play but a very small part in mathematical instruction. The elementary work of the child in number may and should be objective. There may, and should, be a sort of quasi-inductive scaffolding by which to support the rules of arithmetic; but beyond this, what? Again, the facts of history are wholly a matter of testimony, of authority, "second-hand," and by no means within reach of observation or experiment. Any attempt to teach them inductively must be only a sham. A *savant* may study political economy inductively, perhaps, but a youth cannot. A careful analysis of other subjects of instruction must reveal the fact that induction can be used to but a limited extent except in the study of language, notably the mother-tongue, and the physical sciences; and even here, as in physiology, the practical limitations are great to the ordinary pupil, and must be until vivisection becomes general. Moreover, in the physical sciences it is only the most general and obvious laws which will reveal themselves to the pupil pursuing only inductive processes.

Turning from this very inadequate consideration of the logical limitations of the inductive method, we shall find its sphere of operation still further limited by certain practical difficulties which, if not so inexorable as the others, are yet seriously obstructive. It must be ad-

mitted that the method is, relatively, very costly. It is prodigal of time; and the more truly inductive the work is, the slower the progress. It may be said that the slowness is only apparent, the gain in clearness of conception more than compensating by lessening the waste of misconception and the necessity for repetition. And for the young child, the tyro acquiring his first stock of fundamental concepts, this is undoubtedly true. But there comes a time when the deductive method, properly supplemented by illustration, is far more economical of time and teaching energy. The inductive method, moreover, is very costly in other ways. Fewer pupils can be cared for by the same teaching force, because so much more devolves upon the teacher; and the required outfit of apparatus and appliances is vastly expensive. The modern ways of teaching natural science, however sound, are simply insatiable in their pecuniary demands. It is only richly endowed schools, the schools of the few, that can command the requisite plant and teaching force for genuine inductive teaching beyond the most primary stages.

Another serious practical hindrance is found in the fact that inductive methods, whether pure or modified, make much greater demands upon the teacher, both as to knowledge and skill, than the older forms of instruction. The less the teacher is simply an instructor and the more he becomes a guide to discovery, the greater is the risk and the more serious the consequences of failure. It is only in the hands of thoroughly prepared and skillful instructors that the inductive method will prove either safe or profitable; and the visible supply of teachers at all qualified to administer it is, and must be for an indefinite time to come, wholly inadequate. The ordinary teacher essaying a method which he does not half comprehend and for which he is not half furnished, even if the method itself were less exacting, must sink in the bogs and quicksands of desultoriness, trivialty, superficial and false inferences, and other kindred evils. Before the inductive method can enter into its own, even, there must be a great advance of public sentiment both as to liberalty in the financial support of education and rigor of exaction concerning the qualifications of the teacher. Meanwhile, we shall see great waste of time and effort, much "over-elaboration," with danger of reactionary disgust and condemnation.

A third consideration is that of the relation of inductive teaching to books. To a very great degree, all men must be self-taught, in the sense that they must get on without the personal guidance of the living

teacher. Where a great mind touches a few by the inspiration of his personal presence, he reaches thousands through the printed word. But the thousands must know how to be reached. By no means the least part of a sound and useful education is that which teaches the youth how to handle books, how to extract their essence, how to apply them to one's own mental needs, and which gives him withal an appetite or longing for this silent companionship with minds of all lands and times.

The inductive method by its contempt for all second-hand knowledge, by its discarding of all authority, its dependence upon the laboratory, tends at once towards a disrespect for books and an incapacity for their use. Indeed it is to be feared that this tendency is so radical and so inseparably associated with the method that a complete adherence to inductive teaching must involve, in the long run a decadence in the language-power of those brought under it, reaching even to dulling of literary instincts and appreciation. It is no accident and no misfortune that the world is so full of books, of literature as well as science; but it would be the greatest of misfortunes to have these rendered less useful and effective through any deficiencies of human training, through any indirect destruction of the inclination and the power to draw upon what Prof. Payne has so well denominated the capitalized thought of the ages.

Finally, there is reason for asking what is likely to be the effect of a training largely objective, experimental, inductive, upon the proper training and exercise of that important faculty, the memory. It is the fashion nowadays to pour contempt upon memory, to disparage its exercise as something almost disreputable. This discrediting of memory has seemed to be a concomitant of the advocacy of inductive training; though it appears to have outrun the positive doctrine of which it is a negative accompaniment. Not only does every apostle of the new education feel bound to take his fling at memory; but, what is worse, the whole body of teachers seems to have become affected with a conviction of the sin of memorizing. It is a bold man who now dares to admit that he ever requires his pupils to learn anything by heart. The pupils themselves have imbibed the comfortable doctrine, and feel themselves almost affronted if asked to make a memoriter recitation of anything. In short, from a blind exaltation of memory, verbal memory, at the expense of other equally important faculties, the pedagogical world has

swung to the opposite extreme of an exaggerated and almost whimsical depreciation of it. It will soon be time for us to begin to discuss the decay of memory, and start the pendulum on its backward swing.

It is often asserted in a plausible way that this age of books and printing has no longer such need of the memory-power as former times. Is it not rather true that no age ever had half so great a need of memory-power as this age of sciences, of diverse and multiplied knowledges? The true question is how memory can *best* be strengthened and made available, how its abuse can be made to give place to its most efficient use.

And is there not danger that the growing depreciation of text-books, the increasing volume of *talk* on the part of teachers, the lessening of mental tension through the exaltation of sense-perception and a diluted "induction," directly tend towards a permanent weakening of memory, and of the reasoning powers as well? The thoughtful observer of much that is now lavished upon children in the name of inductive methods and pedagogical reform cannot escape such misgivings as these, at times.

If what has thus far been presented has any decent degree of soundness in it, the conclusion follows that deductive teaching is not a thing whose abolition is to be sought, but that it has a large and necessary place and function in education. The real problem is the proper co-ordination of the two general methods, which are, after all, not antagonists so much as compliments. With this problem we have made no little progress in coming to see that with the young child, the beginner in all knowledges, the objective and inductive methods must predominate; and also in the recognition, not yet exaggerated, of the vital importance of the law of self-activity. Taking the educational world at large, there is not yet *enough* of inductive teaching in it; although the time has doubtless come for calling a halt on the visionaries and extremists, who always blow the loudest trumpets in the march of reform.

Let us have reform through gradual growth, through evolution rather than revolution, and hold fast to all that is good whether it be new or old.

Albert Salisbury.

WHITEWATER, WIS.

TIME never respects that which has been created without its aid.

SCIENCE IN ELEMENTARY SCHOOLS.

The report on Science Teaching in Elementary Schools, presented to the Wisconsin Teachers' Association last winter, was, by motion of the chairman of the committee making it, referred to us for further consideration. In pursuance of this commission it has seemed to us desirable to add to that excellent paper suggestions upon the following topics: I. The place of Elementary Science Teaching in the Schools. II. Its subject matter and the proper distribution of it in a course of study. III. The aims and methods of it.

I. The growing conviction that some systematic effort to introduce instruction of this sort is necessary, has, it may be assumed, led the Association to call for these reports. If it is not attempted, four fifths of the children enrolled in our public schools will leave them without having anything done to awaken their interest in the subjects which lie closest to modern thought and modern life. More important still is the fact that one side of their nature, and that the most closely allied to practical affairs, and also the one naturally most active in early life, will have failed to receive in the school its appropriate development. No excuse for further neglect can be founded on the ground that the proposed instruction is new and experimental; on the contrary, it has been thoroughly tested, and its practicability and utility abundantly demonstrated. What is now needed is that the movement, which has grown in a few centers, should become general—a recognized and necessary part of ordinary common school work. In the slow but steady adaptation of school courses to the changing needs and conditions, who can doubt that the time has come when this modification must be introduced into elementary instruction?

Where and how, are then the vital questions. Not, let us say, as an addition to the already overburdened course; something must give way to it, some rubbish which we have outgrown. In our judgment what is desirable in this matter may be successfully accomplished as a part of the instruction now known under various names as object lessons, oral instruction, language lessons, and general information lessons. This teaching exists now in most schools, extending generally from the first year in the primary department up to the grammar school or beyond. The purposes of it are two-fold—to develop the pupil's power over language, and to extend his knowledge of common things. The first

end is not always wisely sought. Language is but an instrument for the expression of thought, and that teaching of it is, on the whole, wisest, which most completely recognizes this relation. That the pupil should have thoughts of his own, and then express them naturally and properly is, therefore, the ideal of this training. Much time is now wasted over profitless exercises which are supposed to guard against errors into which, as a matter of fact, few persons ever fall; so that the drills are but carrying coals to Newcastle. At other times there is an effort prematurely to introduce the technicalities of grammar, which is of doubtful utility and accomplished at great waste of time and labor. Such things are quickly learned when the pupil is ripe for them. Meantime what he especially needs is practice in expressing himself, at first orally and afterwards, as he advances, in writing. He needs to think and then speak—to speak his own thoughts, and to grow in power to do this connectedly and systematically. If his errors are pointed out as they occur, and referred to general principles, much needless work will be avoided and practical skill will be developed. There will remain some purely language lessons, which it is not the purpose of this paper to discuss.

The work in Elementary Science, then, is in our judgment related to the language work, as affording the matter for thought and expression for a portion of it. If introduced in this way it will not add another to the numerous exercises of the school, but simply give wiser direction and more perfect continuity and coherence to exercises now prevailing. It ought not, in our judgment, to usurp the entire field thus described; about one third of it seems to us an appropriate share, and, if wisely used, sufficient for the ends proposed.

II. The matter of this instruction was well outlined in the report referred to us. With regard to the distribution of it, we suggest that the parts numbered I. and II. may be undertaken during the first year of school life, or while the pupils are from 6 to 7 years of age. During the second year the first part of Hooker's Child's Book of Nature may be followed as a general guide. In addition, as an invaluable help to the right method of work, we commend to teachers the small pamphlet by Geo. L. Goodale "Concerning a few Common Plants," published by D. C. Heath & Co., in their "Guides for Science Teaching." (15c.)

For the third year of school life, Part II. of Hooker's Child's Book of Nature may be taken as a general guide. Section III., IV. and V.

of the former report may appropriately be distributed between the second and third years at the discretion of the teacher, paragraphs (2) of Section III. falling more naturally, as it seems to us, in the third year. Valuable suggestions as to the management of the subjects in this paragraph will be found in a small pamplet by Ellen H. Richards, called "First Lessons on Minerals," and also published in the "Guides for Science Teaching." (10c.)

For the fourth and fifth years of school life the third and final part of Hooker's Child's Book may be followed. As a guide to method and a help in devising additional experiments, Cooley's "Easy Experiments in Physical Science" will be found very useful. The elementary notions of Chemistry given in the last section of this book may be advantageously added to the outline in Hooker.

So much regarding chemistry should at least be taught as to enable the children clearly to understand the difference between a physical and a chemical change, and the general properties of oxygen, hydrogen, nitrogen and carbon.

The work thus outlined, which may be successfully accomplished by any intelligent child before he is twelve years of age, and without increasing the burdens of school, would serve to open the eyes of the great body of children to the world around them. It is of course very rudimentary, and constitutes only that elementary stage of miscellaneous work which, it is now recognized, must precede systematic and scientific study. For this as pursued in the higher grades it constitutes an admirable preparation, and if properly conducted will beget a desire for it.

III. It is manifest that several methods are possible in carrying out this instruction. First, the books indicated may be learned and recited; second, they may be used as reading books; third, the matter in them may be read or recounted by the teacher, thus affording material for language exercises of various sorts; or, fourth, the books may be used as guides to suggest topics and some ways of presentation, while the work is so shaped in the class as to depend mainly upon the observation and inferences of the children. None of these ways would be entirely unproductive of good, for by each of them the mind of the pupil will be made acquainted with interesting suggestions regarding matters which are almost daily before his eyes. That will be a strange child whose curiosity to see, and power to see, and habit of seeing and seek-

ing to explain are not somewhat stimulated by such knowledge. Better be taught by the worst of these ways than to grow up in that dense ignorance of all such matters which fell to the lot of many of us in our early years!

There is, however, a choice of methods, and we have arranged those suggested in order from the poorest to the best. The first will with most certainty produce dullness and dislike. The second is not practicable in the earlier stages, nor to be preferred in the later. The manuals suggested as guides present much matter admirably adapted for language exercises, and much which, from its very nature must be read or told to the pupil. We do not think, however, that the ends proposed in this instruction will be best secured by the general adoption of this plan. The main object of the teacher should be to awaken the interest of the pupil and stimulate him to observation and reflection. The earlier work on plants is admirably adapted to develop systematic observation, and any intelligent teacher can, while following the plan of the book and presenting the anecdotes and illustrations found in it, easily lead the pupils to find and describe many additional specimens, and thus to become intelligent observers. In the book on Animals the wise teacher will call for examples and illustrations from the class before suggesting those in the book, or have explanations within the grasp of the class to be thought out rather than tell them to be reproduced. The method to be recommended, then, will be essentially the last. It will be determined always by the purpose to teach the pupil to see for himself and to think for himself; and to express properly and closely what he sees and what he thinks. This end must be esteemed more important than the knowledge to be acquired, and we therefore especially urge the necessity of allowing to teachers great freedom as to the amount of ground they cover. In this department at least it is of the highest importance that they should be teachers and not crammers. It is not necessary to finish any of the manuals suggested, although, on the whole, we think it better to take up a new one at the beginning of each year.

We have been led to suggest certain manuals as guides in this teaching by the conviction that its introduction can be much more generally effected by the use of them. To do just what these manuals prescribe will be much better than to neglect the subject, while the scheme sub-

mitted to us, which we adopt and recommend, suggests many topics of importance for the extension of the work, where this is possible.

J. W. Stearns.

MADISON, WIS.

HOW TO TEACH NATURAL SCIENCE IN PUBLIC SCHOOLS.

[Extract from Report of Dr. Wm. T. Harris to the School Board of St. Louis, for the year 1879.]

In former reports I have discussed at length the significance of the common branches of study and have endeavored to show that even the rudiments, such as reading, writing, arithmetic and geography, are of inestimable importance. Their acquirement works a more potent change in the individual than any subsequent step in his culture. That these rudiments can almost be said to add faculties to the child's mind; that they are so general—so wide reaching in their application—as to lie at the basis of further progress in education; that their claims surpass in every respect those of other special branches that have been urged for admission to the district school course of study on the ground that they are "most practical:" these and other positions have been stated and supported by argument. It remains in this report to present the scheme, by which the claims of these special branches have been recognized in our course of study without compromising the thoroughness of the regular instruction in the conventional rudiments above named.

It was clearly seen that the problem demanded an introduction of a popular course of instruction in natural science in such a way as to react beneficially not only upon the pupil's progress in the regular course, but also upon the teacher's methods and practical skill in imparting information.

NATURAL SCIENCE AS AN INSTRUMENT OF MODERN CIVILIZATION

Granting the importance of natural science as furnishing the theoretical basis of productive industry and the consequent elevation of the masses of the people by means of wealth created thereby, the first question in making a course of study was to bring before the mind the entire field in classified form. The obvious division into Physics and Natural History—the former including the department that deals with elements in their mathematical relations, and the latter including the

descriptive treatment of the world as it exists in multiplicity and variety of special existences—suggests at once two compendious treatises long in use in our higher schools: Natural Philosophy, furnishing the outline of Physics; and Physical Geography, furnishing a similar outline of Natural History. Again, Physics in its broadest acceptation divides into a science of the movement of the masses and that of molecular motion. Chemistry thus forms a kind of transition to Natural History. Natural History, again, treats the world as organic, first the process of the elements including the geological and meteorological processes (taken in their widest compass), second the plant, and third the animal.

THE COMPASS OF NATURAL SCIENCE.

Having thus mapped out the domain of natural science so that our course of study shall not arbitrarily adopt one or more provinces to the neglect of others equally important, the next problem was to ascertain what phases of these several departments are suitable for popular exposition and are easily illustrated. Ascertaining this, it became necessary to sketch out the course in such a way as to make several complete circuits during the eight years of the district school course. The lowest one should seize certain striking features in each department—making a strong impression and silently determining the mind to reflection and observation in the domain of Natural Science. The second course must travel round in the same path, but more systematically and in detail. The third one, still deepening and generalizing the ideas of the pupil, would make the effects permanent. Three courses were fixed upon for this reason. The seven years of the district school course thus allowed three years each to be given to the first and second course, and two years for the third. Inasmuch as the subjects were taken up with a considerable degree of scientific strictness in the High School, the course of study in natural sciences would now extend from the commencement in the primary schools to the last year of the High School. A pupil, coming into any grade in the schools and remaining three years, would know something of each of the great departments of Nature.

THE ORDER OF INSTRUCTION IN NATURAL SCIENCE.

The first year, lowest grade, in the schools began with lessons on the plant; the second year was taken up with animals, and especially the structure of the human body; while the third year initiated the pupil

into physical forces in various familiar applications and made some progress in considering the geological and meteorological elements, such, as earth, air, fire and water. In the fourth, fifth, and sixth years the course took a more practical turn. While the first three years it had dealt chiefly with the rationale of the child's playthings and such phenomena as excited his astonishment, in the second course he was to learn to understand what is useful to man in these departments. In the sixth and seventh years the maturity of the pupil allows him to investigate with some degree of scientific interest, and hence the more general form is adopted.

METHOD OF TEACHING NATURAL SCIENCE.

The important question to be settled was how to bring in these lessons, so as not to distract and dissipate the attention of teacher and pupil from other work. Fatal dissipation of energies follows from undertaking too many subjects at a time. If the teacher has to pass daily from arithmetic to a lesson in natural science, it is likely that one or both of these lessons will suffer. Accordingly, instead of introducing these lessons daily, they were confined to one afternoon of each week and sufficient time given to each lesson to allow a deep and lasting impression to be made. Whereas, in ordinary lessons the pupil is required to be so intensely active that he cannot sustain the exertion for more than thirty minutes, in the natural science lesson he is to give his attention for one hour, but the teacher is so to vary the lesson by lecture, experiment, reading interesting descriptions, conversation with pupils on their experience, that the class shall be able to do this without excessive fatigue. By this arrangement each lesson becomes for the teacher a practical experiment in the art of instruction, and when the pupils are allowed to become listless, the teacher sees her inefficiency portrayed before her and must make greater effort next time.

It seems to me that this phase of the subject—its value to the teacher—is worth quite as much as the immediate value of these lessons to the pupil. I do not lose sight of the fact that he gains from week to week an impression that deepens into practical scientific thought in after years. But the teacher is led to study and thoroughly prepare herself, and then in that lesson, she is led to probe in a freer manner, than ordinary, the miscellaneous fund of experience possessed by the individuals of her

class; thus she cannot fail to find new means of getting hold of pupils in each of the regular branches of the daily course. She will find herself getting more and more emancipated from the slavish use of the text-book and able to stand before her class with a consciousness of her strength and ability to draw out the resources of each and all of her pupils and combine the same into one result.

Thus an attempt has been made to introduce the study of all the sciences with all their infinitude of detail, so as to act as a stimulant on the regular course, as regards both teacher and pupil. It is thought that the pupil will receive even more benefit indirectly through the increased efficiency of the daily instruction than from the weekly lessons, and yet that these lessons themselves will be far more effective than if given in short object-lessons of fifteen minutes a day.

The details of instruction and of the course, together with a synoptic view of it, are given in the appendix of this report. I insert here my special report to the Board on this subject, in order to present the other phases of the subject, not already commented on in the remarks just made.

SPECIAL REPORT TO THE BOARD.

GENTLEMEN: Inasmuch as the first half quarter of the present scholastic year has sufficed to get our schools into fair running order, and to lay out the plan of a new system of school organization which promises to furnish a frame-work on which the schools under your charge may grow to an indefinite extent, the occasion seems to be auspicious for the consideration of certain matters relating to the course of study and the method of instruction to be followed by the pupils and teachers.

That these are great and weighty matters in education every educator knows well, and none better than the members of your honorable body, as is manifest by the interest shown here from time to time in securing the best text-books and the introduction of the most important branches of study into our course.

I therefore beg leave to offer the following remarks and suggestions for your approval, and for adoption in case of approval:

I. And first it will be conceded, I think, that we cannot teach everything in the short period devoted to schooling. Even were the period of schooling much longer than it really is, there are many things learned

much better out of school than in it — many things learned much better at home, or in the field or workshop than in a school room. But with our short school period, lasting on the average for five years with us in the city, and about three years, more or less, in the country, there is the utmost need of the most careful selection of what is essential. The course of study must contain only what the pupil is not likely to pick up from intercourse with the family circle, with his fellow playmates, or with his fellow workmen. More than this, it must contain only such matters as have a general theroretic bearing on the world in which he lives, and the institutions and character of the human species of which the pupil is an indvidual.

II. It is clear then, that the school must furnish the pupil theoretical insight. Here is a common ground, and it is practical to give the pupil a knowledge of general elements which he may apply in after life to any one of the many trades or professions. Every boy and girl will find a knowledge of reading, writing, arithmetic and geography useful in any sphere of life that he or she may be called to fill. Whatever occupation they may follow, these branches will assist them. And what is said of these elementary branches is likewise true of the habits of character formed in a well-disciplined school, such as order, neatness, cleanliness, earnestness, industry, punctuality, self-respect, self-control, obedience to rule, kindness, forbearance, courtesy, considerateness, affability and politeness, sympathy and love.

III. I do not think there is much ground for dispute as to the order for these elementary studies. Reading comes first, for by it the pupil becomes able to pursue independent study, and thus to add to what he receives orally from his teacher. Arithmetic may begin almost as early as reading, and writing should not be delayed at all. Geography should begin as soon as the pupil learns to read with some facility. Compared with other branches, these simplest elements are by far the most important, and nothing should interfere with their most speedy acquisition. They are in themselves the tools which assist in acquiring all other knowledge.

IV. Of man's instruments the most wonderful is language. His whole rational existence depends upon it. Some special study of the structure of this wonderful instrumentality has been found essential in all systems of education. Hence, we place the study of grammar next in importance after the four elements. History well succeeds grammar,

for grammar prepares the way for the human mind, as exhibited and mirrored in language. How the human mind unfolds in time is shown in history. Knowledge of men is more important than knowledge of things, as we all find when we grow up and try to succeed in life. We learn that we can do nothing nor achieve anything without the aid and consent of our fellow men. We must, therefore, understand the springs and motives of human action, both the permanent ones aud the ones that control temporarily.

V. Above and beyond these just-named studies, which form a complete elementary course, such as has been wisely laid down by your rules as constituting the course of study for the district schools—above and beyond these follows the study of the sciences, of the higher mathematics, of those languages from which our own is derived or which are kindred to it, and the literature thereof. These studies in their proper development form the higher course of study, and commenced in the high school.

VI. Now arises the important question: Should any or all of these higher studies be introduced into the elementary course? It is clear that in their proper form they cannot be. The study of a foreign language by its structure ought to be preceded by some study of the native tongue. The study of the higher mathematics ought to be preceded by that of arithmetic; so literature cannot be well studied without a knowledge of the rudiments of geography, history and grammar, to say nothing of reading and writing.

VII. The sciences are twofold: the human i. e., social and political sciences, including political economy, pedagogy and the like, on the one hand, and natural sciences on the other. The human sciences require the highest maturity of thought for their mastery. The natural sciences, which are divided into physics (including the sciences defining inorganic and organic nature, the plant, the animal, and man), imply first, a direct application of mathematics, and secondly, an indirect application of the same in order to comprehend the working of the instruments through which nature is observed and classified. Hence it is evident that so far as complete study and exhaustive survey is concerned, the place for the sciences is in the higher course, as he has been determined by the rules of the Board.

VIII. But there is a further question to settle: Can we not give those children who study five years or a less time in our schools, some out-

lines of Physics and Natural History, which will be of great service to them in after life, and for the time being not interfere seriously with the prosecution of elementary studies?

This question I answer in the affirmative, on the following grounds: The value of all higher studies is two-fold, one as giving us the practical mastery over their spheres through a complete comprehension of them scientifically, the other as giving us a technical mastery over their spheres, thereby adding to our general culture, or as we express it "general information." For instance, it is not necessary to be thoroughly and scientifically an astronomer to read with pleasure and profit the third volume of Humbolt's Cosmos, or indeed most writings on the subject of astronomy. But without an elementary course of some sort in astronomy, these works would be sealed books. The general ideas of a science and its mode of procedure and its technics may be acquired with little labor; nay it may be a mere pastime to do this. On this ground we may introduce certain outlines of Natural History and Natural Philosophy into the lower grades of our schools. But it must be introduced in such a way as to afford relief from the other studies, and not be placed in the same rank with them.

IX. To illustrate my meaning, and with a sincere desire to furnish what seems to be demanded by the community, I have sketched the following outlines, following therein the reference books you have provided for your teachers and with special regard to resources which they furnish. These reference books are Brande's Encyclopedia, Draper's Physiology, Tate's Natural Philosophy, Well's Natural Philosophy, Hotze's First Lessons in Physics, Hooker's Child's Book of Nature, Guyot's Earth and Man, Calkin's Primary Object Lessons, Youman's First Book in Botany, Warren's Physical Geography. It is desirable, in my opinion, that you may add to these a set of colored charts illustrative of the anatomy of plants and animals—one set for each school. That these lessons should be oral, conducted by description and illustration on the part of the teacher, and impressed on the minds of the pupils by question and answer, and free conversation, seems to me the proper mode by all means. And inasmuch as this exercise should serve as a kind of recreation and relaxation from the regular course, I recommend that one hour be set apart for it on each Wednesday afternoon in each room in the district schools.

In recommending the above course, I would guard especially against

any bad effects it might have in diminishing the strictness of the regular course of study by confining it to one hour each week, and by insisting upon the use of the purely oral method by the teacher.

XI. The use of the oral method in this case suggests the question: What is the difference between the oral and the so-called text-book method, and what are the merits and defects of each?

In the former, the oral method, the teacher is the general source of information; in the latter, or text-book method, the pupil is sent to the book for information. In neither of these methods is cramming of memory with mere words considered to be good teaching, and yet it may happen under a poor teacher, whether the oral or text-book method is used.

XII. The excellence of the oral method should be its freedom from stiffness and pedantry, and its drawing out of the pupil to self-activity in a natural manner. Its abuse happens when in the hands of a poor teacher the subject is presented in a confused manner, or scientific precision is lost by using too familiar language or by too much pouring-in without enough exercising the pupil by making him do the reciting and explanation.

XIII. The excellence of the text-book method consists in getting the pupil to work instead of working for him; in teaching him how to study for himself and to overcome difficulties by himself, instead of solving them for him. Unless the teacher knows this and directs all his efforts to achieve this end, very great abuses creep in. Thus it may happen that the teacher requires the pupil merely to memorize the words of the book, and does not insist upon any clear understanding of it. Indolent teachers lean upon the text-book and neglect to perform their own part of the recitation.

XIV. But in the hands of the good teacher the text-book is a powerful instrument to secure industry, precision, accuracy, and self-help on the part of the pupil. In conducting a recitation the teacher should,

1st. See that the main point is brought out, explained and illustrated again and again by the diffierent pupils, each in his own language, and the using of the language of the book discouraged in so far as it tends to verbatim or parrot-like recitation.

2d. The teacher should himself criticise, and call upon his pupils to criticise, the defects made in the statements by each pupil, so that they shall acquire a habit of alertness in noticing inaccuracy as well as lack

of exhaustiveness in definition, whether in oral statements or in the text-book itself.

3d. The lesson should in all cases be brought home to the pupil's own experience, and his own observation and reflection made to verify the statement of the books.

4th. Every recitation should connect the lessons of to-day to the lessons already recited, and the questions awakened in to-day's lessons should be skilfully managed to arouse interest in the subject of to-morrow's lesson.

5th. The good teacher always notes by the recitation of a pupil what are his habits of study, and the recitation is the place where bad habits are pointed out, and the true method of study shown and illustrated.

XV. I think all will agree with me in pronouncing the recitation conducted in the manner here described effective in securing the ends for which you have established the rules and regulations governing the teachers in the public schools. I have now to point out an additional regulation, which, if adopted by your honorable body, will, I think, lead to the correction of some of the abuses more or less prevalent among the teachers of our schools. I refer to the practice of some of our teachers of using the text-book during the recitation as a source of information from which to draw a supply for their own use on the occasion, thus making up for their own lack of preparation. From this practice results the greater bulk of the evils complained of by intelligent parents, who find their children becoming mere cramming machines, instead of intelligent investigators. That the teacher should know at least as much of lesson as the pupil, does not need statement. Why, then, should the teacher have recourse to the text while the pupil is debarred from it? In consideration of the evils arising from this source, I respectfully suggest the adoption of a regulation prohibiting to the teacher the use of the text-book in the recitation whenever the pupil is expected to recite without the book; and that the teacher be recommended to use a syllabus of topics or questions, either written or printed, in the conduct of such recitations.

ON THE METHOD OF TEACHING.

1. The teacher must not consider herself required to go over all the topics assigned for any given quarter. She must not attempt to do any more than she can do in a proper manner. If it happens that only the

first two or three topics are all that can be dealt with profitably, the teacher must allow herself to undertake more.

2. In case the teacher finds that the topics of any given quarter are not arranged in such an order that she can take them up to the best advantage, she is at liberty to change that order; but she must not proceed to the work of a new quarter or to any portion of it until she has first given ten weekly lessons on the quarter's work she has begun.

3. No more than ten lessons should be given on the work laid down for a quarter. When these have been given, proceed to the work of the next quarter, whether the topics of the quarter in hand have all been considered or only a very small portion of them.

REMARK.

The course is arranged with reference to *method* rather than quantity or exhaustiveness. If only one topic is thoroughly discussed in each quarter of the first year, some very important ideas will be gained of the science of botany. In the fourth year of the course, the pupil will come round to the subject again and can deepen his insight into the methods of studying the world of plants, learn the general outlines of classification adopted, and train his observing powers. When he comes to the sixth year of the course, he will again touch upon the subjects in such a manner as to see the province this subject occupies in the world of nature, and its general bearings upon other fields of investigation.

The question will be asked: Why not reduce the number of topics under a given subject to the number that can be actually discussed by the teacher?

The answer is: (1) A selection of topics from a comparatively full enumeration is best left to the individual teacher. (2) The exact number of topics that can be profitably discussed by teachers will vary with their capacities; moreover, it will vary from year to year as teachers become familiar with the course; hence it is necessary to have a variety and to have topics enough for the most rapid classes. (3) It is, moreover, important to keep before the teacher a full outline of the subject, so as to prevent the (very common) tendency to treat a theme in its narrow application only and to omit its general bearings.

GENERAL PLAN OF THE COURSE.

It will be observed that in the seven years' course there is a spiral

movement, or recurrence of the same topics: (1) The subject of Natural science, (a) the plant, (b) the animal, (c) the physical elements and mechanical powers—constitute a primary course of three years; so that even those who receive the minimum of school education shall acquire some insight into the elements and instrumentalities which play so important a part in the industrial age in which they live. (2) In the fourth and fifth years these subjects of Natural Science are taken up again in a second course and much more scientifically developed: (a) Botany, its method and practical application; (b) Zoology and Human Physiology; (c) motion and force in masses, in particles, and as applied in the mechanical powers; (d) Astronomy (forming a transition to the grammar-school course in Physical Geography). Five years is the average attendance in our schools; hence the average pupil will get two courses in Natural Science. (3) In the sixth and seventh years of the district school a third course in Natural Science is given, in which begin to appear more clearly in outline the several sciences. (a) Under Natural History or organic nature: Geology, Meteorology, Botany, Zoology, Ethnology. (b) Under Natural Philosophy, or Physics: Matter, force and motion, machinery, molecular forces and instruments involving their application.

4. In teaching Natural Science it is of the greatest importance to select typical objects or facts; i. e., objects or phenomena that are types of a large class by reason of the fact that they manifest all of the chief properties or attributes common to the other individuals of the class, and at the same time manifest them in the most obvious manner. It would not do, for instance, to select an object in which the properties to be illustrated were not developed, nor an object with which the pupils were not acquainted.

5. Every lesson should be given in such a way as to draw out the perceptive powers of the pupil by leading him to reflect on what he sees, or on the object before him. It is, at first thought, strange—although it is true—that powers of observation are to be strengthened only by teaching to *think* upon what he sees. The process is one of division (analysis) and classification, and, secondly, of tracing causal relations; hence the questions most frequently are: "What qualities or properties has this object (exhibiting the same)? What separate actions or movements form the steps or stages in a process? What other objects and processes have the same (classification)? What relation of this ob-

ject or phenomenon to others, whether as to cause and effect or as to means and end?"

6. *How to conduct a lesson:* (a) Prepare yourself beforehand on the subject of the lesson of the week, fixing in your mind exactly what subjects you will bring up, just what definitions and illustrations you will give or draw out of the class. All must be marked or witten down in the form of a synopsis. The blackboard is the most valuable appliance in oral lessons; on it should be written the technical words discussed, the classification of the knowledge brought out in the recitation, and, whenever, possible, illustrative drawings. (b) Pains should be taken to select passages from the reference books or from other books illustrative of the subject under discussion. to be read to the class with explanation and conversation. (c) Whenever the subject is of such a nature as to allow of it, the teacher should bring in real objects illustrative of it and encourage the same. (d) But more stress should be laid on a direct appeal to their experience, encouraging them to describe what they have seen and heard, arousing habits of reflection, enabling the pupil to acquire a good command of language. (e) Great care must be taken by the teacher not to burden the pupil with too many technical phrases at a time, nor to fall into the opposite error of using only the loose common vocabulary of ordinary life, which lacks scientific precision.

7. *How to use the Reference Books:*

(a) *In the first course*, extending through the *seventh*, *sixth* and *fifth grades*, Hooker's Child's Book of Nature should be followed for the most part, with such hints as to method as are to be gained from a study of Calkins' Primary Object Lessons. SEVENTH GRADE. *First quarter:* Study and use such portions of the first ten chapters of Hooker's Part I. as you can make available. *Second quarter:* Chapters XI to XXI of the same book. *Third quarter:* Chapters XXII to XXVIII. *Fourth quarter:* Chapters XXIX to XXXIII. SIXTH GRADE. *First quarter:* Chapters I to VII of Hooker's Part II. *Second quarter:* Chapters VIII to XVIII. *Third quarter:* Chapters XIX to XXV. *Fourth quarter:* Chapters XXVI to XXXIII. FIFTH GRADE. *First quarter:* Chapters I to X of Hooker's Part III. *Second quarter:* Chapters XI to XVIII. *Third quarter:* Chapters XIX to XXXI. *Fourth quarter:* Chapters XXXII to XXXV. Calkins's Object Lessons, pp. 15 to 50, should be studied in the *seventh grade;* pp. 401 to 431 will be of great service in

the *sixth grade;* and the same book, pp. 139 to 190 and pp. 339 to 400 will be of equal service in the *fifth grade.*

(b) In the second course, extending through the *fourth* and *third grades*, Youmans's First Book in Botany should be studied for method and material for the lessons given in the *first quarter* of the FOURTH GRADE. Only a few selections can be made on account of lack of time, but these should be of the most suggestive order. For *second, third* and *fourth quarters* of the FOURTH GRADE, Warren's Physical Geography will furnish classification, description and facts (pp. 70 to 78, new edition). THIRD GRADE. *First quarter:* Warren's Physical Geography, pp. 68 to 85. *Second quarter:* Refer to Draper's Physiology for information; use "Syllabus of Physiology" for further suggestions. *Third quarter:* Use Hotze's First Lessons in Physics for method, and Wells' Natural Philosopy for information. *Fourth quarter:* Use Warren's Physical Geography, pp. 5 to 8, and Steele's Fourteen Weeks in Astronomy.

(c) In the third course, extending through the *second* and *first grades*, Warren's Physical Geography should be used for the first year, and Well's Natural Philosophy for the second year. Constant reference should be made to Tate's Natural Philosophy, Brande's Dictionary and other books. The Public School Library is free to teachers as a Reference Library. A set of colored illustration-charts is given to each school; many things can be taught by means of charts.

8. Although instruction in Natural Science is limited to one hour per week, yet it is expected that what is taught in these lessons will be referred to frequently in the regular Course of Study. Whenever, for instance, any of the subjects treated in this course of instruction come up in teaching the other branches, an exposition of their scientific phases should be required of the pupils. This will apply to the subject of Geography more than to the others. Arithmetic, History, and the Reading lesson will occasionally furnish references to one or more provinces here mapped out.

9. In connection with the Geography, History and Grammar lessons a study of MAN should be carried on parallel to the study of material nature of the weekly oral lessons. The outlines of study embrace *1st*, Physiology, or science of man as a body; this comes under Natural Science; *2d*, Ethnology, or study of man as coditioned in development by his surroundings, climate, race, etc.; *3d*, Wants and necessities of

food, clothing, shelter, and the relation of these to the world, animal, vegetable and mineral; *4th*, Language and its divisions and structure; *5th*, States of Society; *6th*, Employments and occupations; *7th*, Government; *8th*, Religions. A synopsis of the entire course of instruction in the District Schools is printed in a separate circular accompanying this.

10. Compositions should be written subsequently to the oral lessons, on the topics discussed. They should be short and to the point, and always in the pupil's own words.

11. *Resume.* To name once more in a brief manner the cardinal points to be kept in mind constantly by the teacher:

(a) Take up only so many of the topics laid down for any given quarter as can be discussed thoroughly without overburdening the pupil's memory or distracting his power of attention.

(b) Never take up a topic that you are unable to explain and illustrate so clearly as to make the pupil understand it; avoid all phases of the subject that will tend to confuse rather than enlighten.

(c) Spend only ten weeks on the work of a given quarter, whether you do little or much in it; proceed then to the topics of the next quarter.

(d) Relieve the hour's work by as much variety as possible: *first*, reading and explaining something adapted to the capacity of your pupils; *secondly*, drawing out in conversational manner the experience and information which your scholars already possess on the subject; *thirdly*, exhibiting the visible objects which you or the pupils have brought to illustrate the lesson, and requiring the pupils to notice and name the properties, qualities, parts, and attributes; *fourthly*, never omitting to show by a synopsis on the blackboard what has been discussed in the lesson, its classification and relation.

(e) Require short weekly compositions of the pupils above the fifth grade, in which they express in their own language their ideas on the subjects treated in the oral lessons.

As flowers carry dew drops trembling on the edge of the petals and ready to fall at the first waft of wind or brush of bird, so the heart should carry its beaded works of thanksgiving, and at the first breath of heavenly favor, let down the shower perfumed with the heart's gratitude.— *H. W. Beecher.*

OFFICIAL DEPARTMENT.

TEACHERS' EXAMINATION FOR STATE CERTIFICATES, 1887.

I.

BOARD OF EXAMINERS.

The Board will consist of Pres. Geo. S. Albee, Oshkosh; Prof. J. W. Stearns, Madison; and Prof. J. Q. Emery, Ft. Atkinson.

II.

TIME AND PLACE OF EXAMINATION.

The Board will meet at Madison, December 26, 1887, at 9 o'clock, A. M., and will continue in session four days.

The examination will be held in the senate chamber.

On Saturday, December 31, the Board will determine the standing of applicants and make report to the State Superintendent.

III.

CHARACTER OF EXAMINATION.

For the limited (five years') State certificate, examination will be had in the branches required for a first grade county certificate, with the addition of English Literature and Mental Philosophy.

For the unlimited (life) State certificate, examination will be had in the branches required for limited State certificates, with the addition of Botany, Zoology, Geology, Political Economy and General History.

Seventy per cent. is the miuimum average standard for a *limited* certificate; and seventy-five for an *unlimited.*

Seventy per cent. is the minimum standard for each of the first grade branches, and sixty-five per cent. the minimum in English Literature, Mental Philosophy, Botany, Geology, Zoology, Political Economy and General History.

The *limited* State certificate will require three terms of four months each of successful teaching. The unlimited, seven terms of four months each.

Satisfactory testimonials of moral character will be required.

Applicants for *limited certificates* will be allowed trials at three consecutive sessions of the Board of Examiners in which to complete the ex-

amination. Applicants holding the limited certificate, or its equivalent, will be allowed trials at any two consecutive sessions of the Board of Examiners during the validity of the certificate held, in which to complete the examination for a *life certificate.*

During the limits herein fixed re-examination will not be required upon branches in which a satisfactory standing has been attained.

IV.

SUGGESTIONS TO APPLICANTS.

Examination in branches additional to those required for a limited certificate will be taken up on the third day—Wednesday, December 28.

The evenings of the first three days will be devoted to oral examinations in the following branches: Reading, Mental Arithmetic, Grammar, U. S. History, Physiology, Geography, Mental Philosophy, Physics.

In examination upon any branch drawing may, and in Physiology, Physics, Botany and Zoology, will be required to the extent of correctly and creditably representing the objects described.

As a guide to such as may desire to review either of the following branches before examination, or are making original preparation in these studies, the following suggestions are made: Political Economy—Newcomb's or F. A. Walker's; Mental Science—Sully's Teachers' Handbook of Psychology; General History—Myers' Ancient and Myers' Mediæval and Modern History, or Fisher's Universal History; English Literature—Brooke's Primer of English Literature and Backus' Shaw's English Literature for the historical study; for the critical, Swinton's Studies in English Literature (Harper's). Candidates for the life certificate will be expected also to be thoroughly and critically familiar with Shakespeare's Julius Cæsar and with Emerson's Representative Men. Physics—Gage or Avery; Zoology—Harbison or an equivalent; Art of Teaching—Fitch's Lectures; Theory of Teaching—Sully's Teachers' Handbook of Psychology.

Stationery needed will be furnished by the Board.

The attention of all persons purposing to become principals of free high schools in Wisconsin, and who are required by law to pass special

examinations to qualify them for teaching in such high schools, is especially called to the time and place of holding this examination.

Sec. 494, R. S., ch. 325, Laws 1883, Sec. 1.

J. B. THAYER, *State Superintendent.*

MADISON, WIS., August 22, 1887.

EDITORIAL.

THE subject of science teaching in elementary schools occupies a considerable space in this number of the JOURNAL. It has seemed to us that the publication of Dr. Harris' report on the subject in connection with the paper presented to the Wisconsin Teachers' Association would aid materially in promoting a clear understanding of the extent and character of the work proposed. His report relating to this subject is given entire, except that the outline of the course of study has been omitted. The first three years of this correspond almost exactly with the work in Hooker's Child's Book of Nature, which is recommended as a teacher's guide in the report to the Association. Beyond this Dr. Harris outlines a scheme for three more years below the high school, in which the same branches are taken up again but in a more extended and systematic manner. Thus, with the high school course, the spiral arrangement of which he speaks is completed. It is worthy of remark that in the other branches of school work this "spiral" plan has long been followed. In reading and mathematics, and in geography and history taken together as one study, the pupils advance a certain definite stage in each grade of their school course. They may and should do likewise in their knowledge of the material world about them. This is the proper field for giving them that training in observation of which we have talked so much. It may be useful to add that the difficulty of this work for teachers has been greatly exaggerated. An extensive and thorough knowledge of the sciences is of course a great advantage to one undertaking it, as an extensive and thorough knowledge of literature is to those who are to teach reading. Any branch of instruction, in any grade, is made more significant and valuable if the teacher has such a broad knowledge of it. But it ought not to be given up because teachers with this full knowledge are not found in the schools. The work proposed is of a very simple and elementary character. A brief examination of the manuals suggested will be sufficient to show this. Any teacher who brings to the school good sense and a habit of thinking about things ought to be able to do it successfully, with such help as can be secured from a good textbook on the subjects. The effect upon the teachers of trying to do it will be exceedingly beneficial. Through it they will more rapidly learn natural and vitalizing methods of teaching than through any of the other branches.

"THERE is no sense whatever in such an expression as 'mere words,'" says Prof. Max Muller. We might turn the sentence about, and say that by *mere*

words we mean an expression in which there is no sense whatever. *Mere words* all of us have heard — words used in such a manner as to convey no meaning. Dr. Campbell has in his rhetoric a very interesting chapter on talking nonsense, in which he shows very clearly that men of reputation and ability sometimes slip into speaking and writing sentences void of sense. One such remarked, when confronted with a passage out of his own writings, "I thought that meant something when I wrote it, but I cannot make out that it does now." This using of empty words results not merely from the effort to be deep or impressive in diction, but still more often from the habit of picking up and using current phrases, without enquiring particularly into their meaning. Even teachers are not exempt from this failing. If called on to tell what they mean by "the natural method of teaching languages," how many could give an intelligible account of the phrase? and of those who could, how many in a company would be found to have the same notions of its meaning? If a gathering of teachers were pressed to explain exactly what they mean by "inductive methods," what result would probably follow? Or if instead the still more current phrase "the new education" were taken up, is it not likely that a good deal new about it would be developed? These and other current phrases are, with many who use them, mere words — words empty of any meaning definite enough to be put into speech: with a much larger body of persons they are so far mere words that the differences of meaning attached to them by different parties in a discussion fail to become apparent — they are, as Mr. Matthew Arnold would say, "words flung out at an object of consciousness," but an exceedingly vague object. It is certainly a defect in our training that so many intelligent, and presumably well-educated persons fall readily into this sort of error. A critical habit of thought has not been formed in them, a habit, which when acquired, makes one cautious about using terms to which he has not been at pains to attach a definite meaning, and, further, a meaning which is justified by the usage of those who are fully acquainted with the matter. This critical habit is clearly the foundation of correct thinking, because in the search after accurate meanings the content of complex notions is necessarily unfolded, and their limits defined, so that the man of critical habits is usually the man of ideas; and also because the using of words in a fairly definite sense gives definiteness and consecutiveness to thought. One who fails to discover any sense whatever in such a phrase as "mere words" must have been peculiarly fortunate in his training and in his associates.

METHODS, studied and cultivated for their own sake, have given rise to a false standard of judging teaching, which it will be necessary now to supplant with a better. The work is supposed to be good if it is simple, consecutive, vivacious and ingenious. These qualities appeal at once to the approval of the visitor, and they are indeed very valuable. A good plan effectively wrought out is indispensable to good teaching. But it is possible to have all this in the doing of what is not worth doing, and we shall need to transfer our thought from the

method to the matter to which method is applied before we shall skillfully discriminate what is worth doing, and the still more difficult point what is best worth doing. While we are absorbed with studying and admiring ways of doing we are exposed to the error of overlooking this fundamental matter; yet what a comment on a teacher it would be to say, "He did in an admirable way what was not worth doing at all!" or, "what would better have given place to something else!" In short, there is a fascination in the study of methods, which is apt to lead us to disregard the intrinsic value of the thing done. Precisely this, however, needs to be most earnestly considered now. The President of the Wisconsin Teachers' Association struck the key-note in his annual address this summer. There is very much ill-considered matter in our courses of instruction, matter that might be omitted without real loss; and the most important subject for study at present is "Where is there waste?" Certain tests must be found out and carefully applied in order to weed out the waste. For example, teaching what the pupil knows or will learn for himself by the time he needs it, is clearly waste. No exquisite art in the doing of it can ever make it worth doing. Is not a good deal of our present language work of this character—a superfluity occupying time which should be given to something necessary? Will not the pupils five years hence speak and write just as well if they do not have a good many of our ingenious drills? Then why give them? Again, what is not practically useful in itself or as a basis for further acquisition, and is sure to be soon forgotten, is waste. Apply this test to work in geography and grammar, and will there not be a sensible diminition in the things we teach? Or, again, the lesson which has not a definite and necessary place in the working out of a general purpose, so that we can say clearly "it served such an end," would better be omitted. How many senseless and dreary reading lessons would that principle relieve us of? How much senseless and profitless drill in spelling or penmanship would it cut off or transform into intelligent work? This kind of inquiry must be earnestly pursued by teachers and principals before we can escape the charge of waste.

OUR DRAWER.

SOME DON'TS.

Don't cultivate a disagreeable disposition.
Don't neglect known duties.
Don't commit such errors of speech as the following:
Don't pronounce *ing* like *in;* as, *even-in* for *evening*, *writ-in* for *writing.*
Don't pronounce *ow* like *ur* or *wh;* as, *hol-lur* or *hol-luh* for *hollow.*
Don't pronounce *ed* like *id* or *ud;* as, *unit-id* or *unit-ud* for *united.*
Don't pronounce *ess* like *iss;* as, *good-niss* for *goodness.*

Don't pronounce *el* like *il*, nor *et* like *it*, nor *est* like *ist;* as, *cru-il* for *cruel*, *baskit* for *basket.*

Don't pronounce *ent* like *unt*, nor *ence* like *unce;* as, *si-lunt* for *silent*, *sen-tunce* for *sentence.*

Don't insert the short sound of *u* before a final *m;* as *hel-um* for *helm.*

Don't add the sound of *r* to a final vowel or diphthong: as, *ide-ar* for *idea.*

Don't omit the sound of *d* when preceded by *n;* as, *stan* for *stand*, *frenz* for *friends.*

Don't omit the sound of *t* when preceded by *c* (*hard*) in the same syllable; as, *aks* for *acts*, *exak-ly* for *exactly.*

SUGGESTIVE ANECDOTES.

THE USE OF FAILURES.—The first thing, then, to do with a failure is to find out the reason of it. In this matter men may sometimes learn from boys. Readers of *Tom Brown's School Days* will remember how Tom gained his skill in wrestling. It was in the school of hard experience. Tom was at first a poor wrestler, and had to work his way up from the very bottom, but after every fall he set himself to find out the particular thrust or trip that had sent him on his back, and when he was apparently foiled he did not give up, but "thought about that fall at his meals, in his walks, when he lay awake in bed, in his dreams." Such study of one's failures can never be fruitless, but, unfortunately, such study is not so common as it ought to be. Not many days ago a lady, whose work of years had been overthrown by lack of ordinary caution, said to a visitor: "I will never try again. I tried my best and failed, and now I have decided just to take life as it comes and enjoy it as well as I can." The lady spoke as if she were proud of the new worldly wisdom which she had gained from her recent experience; to the hearer her words sounded rather like worldly foolishness.

NOT AFRAID TO WORK.—During the War of Independence, it became necessary at one time to build breastworks on Dorchester Heights. The work had continued for several days, and there were not men enough to do it in the time required. One morning a gentleman on horseback rode into the enclosure, and looking round, saw an empty wheelbarrow standing near, and not far off was an idle soldier.

"Why do you not work with the others," said the gentleman.

"I am a corporal, sir," he replied.

The gentleman immediately dismounted, took the spade and wheelbarrow, filled it with sand, and wheeled it to the breastworks, emptied it, and wheeled the barrow back to its place; then, without a word, mounted his horse and rode away. The idle corporal had learned a lesson he would never forget, for he had seen Gen. Washington do what he would not do.

A DOG'S INTELLIGENCE.—There is a dog we are acquainted with, Lion by name, who gives daily proof that he knows what is said to him. A lady called

the other day. During her call Lion came in, lay down on the parlor carpet, and shut his eyes. The conversation went on, and the visitor said: "What a handsome dog you have?" Lion opened one eye. "Yes," said his mistress, "he is a very good dog, and takes good care of the children." Lion opened the other eye and wagged his tail to and fro along the carpet. "When the baby goes out he always goes with her, and I feel sure then that no harm can come to her," his mistress went on. Lion's tail thumped up and down violently on the carpet. "And he is so gentle to them all, and such a playmate and companion that we would not take a thousand dollars for him." Lion's tail now went up and down, to and fro, and round and round, with great glee. "But," said his mistress, "Lion has one fault." Total quiet of Lion's tail, together with appearance of great concern on his face. "He will come in here with dirty feet and lie down on the carpet, when I have told him time and again that he must not do it." Lion arose with an air of shame, and slunk out of the room with his tail down.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

SHE who nips off the end of a brittle courtesy, as one breaks the tip of an icicle, to bestow upon those whom she ought cordially and kindly to recognize, proclaims the fact that she comes not merely of low blood, but of bad blood.—*O. W. Holmes.*

IN my opinion, the boy who leaves at the end of the common school course with a love of reading good books is better prepared for a life of honor and influence than one who passes through a high school course without that love; and he who has an ordinary high school education, combined with a taste for good reading, is better equipped for the duties of life than the graduate of the best college or university in the country without that taste.—*J. B. Peaslee.*

LET it be our hope to make a gentleman of every youth who is put under our charge,—not a conventional gentleman, but a man of intellectual resource, a man of public spirit, a man of refinement, with that good taste which is the conscience of the mind, and that conscience which is the good taste of the soul.—*James Russell Lowell.*

SOME TEACHING DEVICES.

A GEOGRAPHY GAME. This game has for a foundation some directions found in an old school paper years ago. Each pupil is to be prepared with pencil and paper. I allow a certain time, say five minutes, for writing all the geographical names beginning with a certain letter which I name, after all directions are given. At the end of the time, the one who has the largest number of names tallies one.

One pupil is called upon to read his list. As he names each, those who do not have it, raise hands. If no other has the word, if he can tell of what it is the name and where it is, he tallies a number equal to all in the game excepting himself. Otherwise each of the others tallies one.

After his list is finished, others are called upon, until all names are read. Then tally marks are compared and the winner announced.

It is not expected that any name will be used more than once on a paper, even though, like Minnesota, it be the name of a State and a river.

Other conditions might be added: as, if pupils speak too low or indistinctly, let each of the others tally one: or, if a name be repeated after having been read by one pupil; or, if it be not the name of a natural or political division.—*E. C. Powers.*

UNIQUE SPELLING LESSONS. A teacher recently gave fifty words such as a grocer's boy would be called upon to use in taking orders, a housewife or servant girl in giving the same. They were written upon the board in columns, then copied by the children, and the dictionary consulted by each pupil to see if there were different spellings allowed for any word, and so discover the best meaning of the word. After the spellings of the word had been learned, each pupil made store orders, or made charges on memoranda, until he had used in these ways every one of the fifty words. This tested their knowledge of the meaning, the spelling, the method of measuring, and a reasonable price. This exercise, lasting two or three days, was one of the most interesting the school ever had, and that it was one of the most profitable goes without saying. But the Lewis school, Roxbury, is in the habit of having exercises interesting, profitable, and varied.—*Journal of Education.*

A MODEL NUMBER LESSON. We here give as nearly as possible, the recitation of a number class whose members had been in school but little more than one term. The teacher simply told her class to fill their slates with problems; no limit was fixed, no hints were given, but that dozen of little old men and women began to work. The teacher explained to *Reporter* in answer to a series of questions, that the pupils were making up examples that should combine work in the four fundamental operations as far as they knew. Miss B. said: "Tom will have some good ones, Mary's will be all right, Ben has not been in the class quite long enough to do much, Eddie makes bad work on the slate." Time was called, a pupil was asked to recite. He took a little squint at the upper left-hand corner of his slate, glanced at another portion of his slate and said: "I had six apples and my papa gave me seven more, how many had I then? I had 13, for $7 + 6 = 13$." Another said: "I had nine cherries and gave my teacher five, how many had I left? I had four left, for $9 - 5 = 4$." (Read, "nine less five equals four.") And so on they proceeded, adding, subtracting dividing; tubs, pears, barrels, tops, houses, flowers, etc. They showed their slates. In the upper left-hand corner were the equations: $7 + 6 = 13$, $9 - 5 = 4$, $8 \div 2 = 4$, $7 \times 3 = 21$, $6 \times 7 = 42$, $10 \div 5 = 2$, $9 + 7 = 16$, $18 - 5 = 13$, etc. The remain-

ing portion of the slates were covered with pictures of apples, cherries, flowers, tubs, pails, houses, barrels, tops, etc. That was all. The pupils supply the language as they recite.—*Moderator.*

LANGUAGE EXERCISES.

1. SENTENCE BUILDING. Combine each of the following groups into a single sentence:

They had crossed the ditch. They had still to work their way through the garden wall. This wall was nearly four feet thick.

They had agreed to meet at a certain spot. He arrived at this spot. His friend had been captured. His friend had been taken back to prison. He found out this on his arrival.

The turnkey often entered the apartment. He never gave notice of his coming. The prisoner had to secrete his tools. He had also to secrete the chips and rubbish. The appearance of these would have betrayed him.

1. LETTER WRITING. 1. Write a letter ordering goods.

2. Write an answer announcing shipment of goods.

3. Write a second answer, declining to open an account, and giving reasons. Make it very polite.

4. Acknowledge receipt of goods, expressing thanks for promptness, and enclosing check in payment.

5. Write a second answer, acknowledging receipt of part of goods, but specifying some which have not arrived, and some which are not satisfactory.

6. Write to some prominent person with whom you are acquainted, asking for a letter of recommendation.

7. Write a letter of recommendation for a boy seeking employment.

8. Write a letter of introduction for a boy.

3. HOMONYMS. Write sentences illustrating the difference in application between:

Mean and mien; chagrin and shagreen; canvas and canvass; time and thyme-sweet and suite; stationary and stationery.

4. FORMING PLURALS. 1. Name five words which add *es* to form the plural.

2. Write the plurals of fox, potato, cargo, family, turkey, tooth, knife, monkey, cherry, buoy.

3. Name a word which adds *ren* to form the plural.

4. Name ten words ending with *f* and give the plural of each.

5. Write the plurals of chimney, penny, volcano, lily, valley, jockey, pulley, tax, deer, buffalo.

6. Give list of ten peculiar number forms.

7. Name five words ending in *o* which form their plurals by adding *es*.

8. Quote two rules forming the plurals of nouns ending with *y*.

9. There is only one word which forms its plural by adding *en;* name it.

10. Name four nouns which have the same form in both numbers.

OUR BOOK TABLE.

A NEW PHYSICAL GEOGRAPHY.

APPLETON'S PHYSICAL GEOGRAPHY. Prepared on a new and original plan. D. Appleton & Co., New York; 140 pp.

It is manifest that the publishers have spared no pains in the preparation of this manual, and consequently we have a text which in extent, variety, accuracy and freshness far surpasses any other physical geography issued in this country. The different subjects have been assigned to specialists, ten of whom have been employed on the text, while many others have contributed suggestions and criticisms. Dr. Newberry, of Columbia College, has prepared the matter on the general structure and geological history of the earth; Prof. Hitchcock, of Dartmouth, that on the geology of North America; Mr. Gannett, chief geographer of the United States Geographical Survey, the portion relating to general physiography and the physical features of the United States; Dr. Stevens, of the Packer Collegiate Institute, writes of terrestrial magnetism, volcanoes and earthquakes, coral islands, the earth's waters, and meteorology; Dr. Britton, of Columbia College, furnishes the chapter on plant life; Dr. Merriam, Ornithologist of the Department of Agriculture, that on zoology; Prof. Dall, of the Smithsonian Institute, that on ethnology; Mr. G. F. Kunz, that on precious stones. Such an array of authorities gives assurance of the trustworthiness of the matter, which in all the chapters is made to embrace the latest observations, discoveries and theories. This is seen, for example, in the chapter on volcanoes and earthquakes, in which we find accounts of the great eruption of Krakatoa, of the Charleston earthquake, and of that of the Riviera which occurred in Febuary of the present year; the chapter on atmospheric disturbances is especially clear and satisfactory in the explanation and illustration of Ferrel's law, and of cylones and tornadoes,—a great advance upon the matter usually found in text-books on this subject; the study of the oceans, again, gives in brief form the chief results of the deep sea explorations which have been so fruitful in discoveries during the last few years. Indeed, every part of this book, so far as we have been able to discover, is carefully brought down to the present state of knowledge. The frequent references to monographs for fuller information are a valuable feature.

The illustrations of the volume deserve especial commendation. The engravings are numerous and very excellent, and are closely related to the text which they serve to elucidate and to supplement. The maps are finely executed, accurate, and devised to present to the eye, by means of colors, lines, and print, a great variety of interesting and important information. This means of teaching is of very great value, and deserves to be more generally used in text-books than it has been hitherto. In addition to these there are plans, and sections, and charts, and diagrams wherever these devices will help to a clearer understanding of the matter treated. Mechanically the book is very nearly perfect.

The variety and complexity of the subjects treated force upon one the ques-

tion whether children in grammar schools can be expected to deal successfully with them. The contrast between this book and the physical geographies of ten or twelve ago is very great, not only in the extent of the matter presented under each topic but in its character. It is more complex and significant in the modern treatise, underlying principles are more carefully sought after, far-reaching relations are suggested or developed. In all these respects, which are wise and necessary, the subject is lifted above the grasp of immature minds. Moreover, the method of presentation is necessarily analytical, beginning with the most general concepts and proceeding by definition and division down to those which are more simple. But while this method is adopted to brief presentation, it does not conform to the natural processes of learning with young people. They need to deal with the particulars first, and climb gradually to the generalizations. In the subject of plant life, for example, we have the sub-kingdoms described, the physiology of plant life, and the distribution of plants. But the beginner in this subject can deal profitably with these generalizations only when he has already learned something of botany, and is mature enough to appreciate in some measure the reach of the generalizations. The same thing may be said of the geology and the zoology and other sections. The inevitable result of the expansion of knowledge in this field and the effort to make text-books fuller and more rational must be, in our opinion to push this study forward to a later position in the course, and give it a place near the close of the work in the high school.

—THE ORDER OF WORDS IN THE ANCIENT LANGUAGES compared with that of the modern languages, (Ginn & Co., 114 pp.), is a translation, by Pres. C. W. Super, of the Ohio University, of an able French treatise by the distinguished linguist Henri Weil, of Paris. It seeks for a philosophic basis on which to explain the peculiar order of Greek and Latin sentences, and finds this in the nature of the thought conveyed, which always seeks it departure from what is in the mind of both speaker and listener, and drives toward the goal of discourse, or the information to be imparted, with which the sentence concludes. How the principles of emphasis and the distribution of modifiers work with this central idea to determine the actual form of the sentence is ingeniously explained and illustrated in this treatise. A student of the ancient languages will find the book not only interesting but also very helpful to him in grasping the genius of those tongues.

—FACTS AND FICTIONS OF MENTAL HEALING, by Chas. M. Barrows, (H. H. Carter and Karrick, Boston; 248 pp.), discusses a subject just now attracting much attention not quite from the point of view of the mental healers themselves, but rather from that of a transcendental philosopher. He passes in review the doctrines of the mental healers, and shows quite clearly that the cases of healing to which they appeal prove that the doctrine has little connection with the result, so that a healer may get along quite as well without "taking a course" in what its leaders are pleased to call "Christian Science." But our

author does not descend to common sense and material facts. He is not content to recognize that the state of the mind has much to do with the state of the body and to work out this palpable truth. He must go farther and have an all-prevading spirit which flows through the mind of the mental healer and magically cures the disease of the patient, which after all is a delusion only. The author is a man of learning and ability, and writes very agreeably, even in handling abstract subjects, but he would carry more weight if he applied severer tests to his authorities, and more sceptical criticism to his supposed facts.

—STORIES OF HEROIC DEEDS, by James Johonnot, (D. Appleton & Co.: 148 pp.), is the second book in Appleton's Historical Series. It is for second reader pupils whom it seeks to interest in history by giving them a foretaste of some of its romance. The first tales are classical myths. These are followed by Indian Stories, Stories of the Revolution, Scottish Stories, and seven or eight miscellaneous tales full of interest. The book will charm young readers.

—THE TENTH REPORT OF THE STATE BOARD OF HEALTH OF WISCONSIN is at hand. This always contains matter of interest to school teachers, not only as intelligent members of the community, and therefore interested in what pertains to the general welfare, but also as relates to their especial calling. The present report offers two papers of the latter sort. The first is a brief general discussion of School Sanitation, by Prof. Albert Hardy, of La Crosse; and the second is an article on School Furniture, by Prof. T. W. Chittenden, of Appleton. The illustrations accompanying the latter are very instructive. They are made from photographs of a boy who was stripped of his clothing and placed in such conditions as prevail in our school-rooms until he assumed one of the common positions. The photographs then taken show very impressively how his form is distorted by the conditions, and the excellent discussion which accompanies the cuts emphasizes the lesson of the pictures. Often as this subject has been discussed the ignorance and apathy of teachers and communities regarding it is still very great, and we rejoice that attention is again so effectively drawn to the matter by this report.

—ONE THOUSAND AND ONE QUESTIONS AND ANSWERS ON PHYSIOLOGY AND HYGIENE, by B. A. Hathaway, (Burrows Bros., Cleveland), follows a method of presentation which seems to us very objectionable, inasmuch as it almost completely prevents the development of principles and the rational relations of facts, and substitutes mechanical memorizing for intelligent apprehension. Here are questions and facts but of the meaning of the latter, of what may properly be called a science of physiology and hygiene, not so much as a suggestion. The publishers, however, have a very excellent line of books, which they offer at very low prices, as the reader may see for himself by referring their list in another part of the JOURNAL.

— CHAUVENET'S TREATISE ON ELEMENTARY GEOMETRY, revised and abridged by W. E. Byerly, (J. B. Lippincott & Co., Philadelphia; 322 pp.; $1.20), merits favorable attention from all teachers of this subject. The original treatise was recognized by the best mathematicians as one of rare excellence for sim-

plicity and scientific precision, being prepared from the standpoint of the modern higher analysis. The editor has sought to develop the pupil's power of grasping and proving geometrical proof by more and more condensing the demonstrations given as the pupil advances, until at last they are often mere hints, by the aid of which the proof is to be developed. Numerous exercises and propositions for original demonstration are also given.

—HEALTH LESSONS, a primary book, by Jerome Walker, M. D., (D. Appleton & Co.; 194 pp.), is a very attractive book, both in its matter and its mechanical make up. The text is familiar and entertaining, well adapted to keep the attention of young readers, and the illustrations are ingenious and beautiful. The author tells us that the lessons have been tested in the ten-minute talks and reviews to the primary classes of the Brooklyn Training School for Teachers; and a brief examination will satisfy a teacher that it is well adapted to primary classes.

—PHOSPHORUS HOLLUNDER, with explanatory notes by Oscar Faulhaber, (D. C. Heath & Co.; 77 pp.; 30c.), is a very bright and entertaining story in German, by L. V. François, which is prepared for American readers with necessary notes and helps.

MAGAZINES AND PAMPHLETS.

—The numbers of *Littell's Living Age* for August 6th and 13th contain Louis XIV. and his Court, and Bishop Fraser, *London Quarterly;* Character and Ability in Politics, and Alsace-Lorrains and the European Situation, *National;* The revised Study of Berkeley, and Montrose, *Macmillan;* The Royal Duke-Doctor, *Good Words;* "Old Hook and Crook," and the Private Journal of a French Mariner, in 1749, *English Illustrated;* The Charm of Pomp, The Pleasures of Travel, and Persian Plays and Players, *Spectator;* La Comedie du Jour, *Saturday Review;* At Church in the Woods, *Pall Mall;* Cocoanut Pearls, *Nature;* with installments of "Major Lawrence," "Richard Cable," "A Secret Inheritance," and "Monsieur Silvain's Secret" and poetry. For fifty-two numbers of sixty-four large pages each (or more than 3,300 pages a year) the subscription price ($8) is low; while for $10.50 the publishers offer to send any one of the American $4.00 monthlies or weeklies with *The Living Age* for a year, both postpaid. Littell & Co., Boston, are the publishers.

—In the September *Atlantic* Mr. Crawford's story, Paul Patoff, reaches a most novel and deeply interesting scene, which has perhaps never been excelled by this author. The whole number is very attractive in its stories, while Mr. Terry's account of the Vireo, "A Woodland Intimate," Mr. Noble's "By River and Road in Russia," O. W. Holmes' "Hundred Days in Europe,"—devoted this month to Paris,—Mr. McMaster's "Franklin in France," and Miss Johnson's account of the Duke of Burgundy, "Le Roi Manque," will be found enjoyable and profitable reading.

—The August *Century*, besides the Lincoln biography, which is occupied with

the Cooper Institute speech, contains Snubbin' Through Jersey, an account of the Mazopil Meteorite, Azotia,—one of Joel Chandler Harris' Negro Stories, Our Kivigtok, an attractive arctic sketch by Lieut. Greeley, Low Prices, High Wages, and Small Profits, by Edward Atkinson, the war papers, and the usual entertaining miscellany.

NEWS AND NOTES.

—Work has been commenced on the addition to the Madison High School building. The addition is to be larger than the whole building as it now stands, and will cost nearly twenty thousand dollars. It will contain a large assembly room adequate to the seating of the whole school, and will be warmed and ventilated after the most approved methods. A new school building is also to be erected in the Third ward, which will cost about ten thousand dollars.

—In St. Croix county a woman has been elected school treasurer of district No. 2, town of Pleasant Valley. The women of the district attended the school meeting in large numbers, and voted for Mrs. A. A. Goff, who received a majority of the votes cast. The director and clerk refused to receive or act upon Mrs. Goff's bond, claiming that the incumbent, Peter McDonald, was entitled to hold the place until 1889. Mrs. Goff carried the case to the county court, and obtained an order directing the director and clerk to receive her bonds as treasurer.

—At the meeting of the German teachers in Milwaukee, July 27 and 28, some interesting statistics were presented relating to the growth of instruction in the German language in our public schools. In Milwaukee during the last year 13,285 pupils received this instruction, of whom 10,193 were of German parentage. Instruction in German was introduced into the city schools in 1868, and in 1885 the number receiving it reached only 6,882. The increase in two years has therefore been very remarkable. In the Chicago schools 30,237 were studying German last year, against 9,400 in 1884–5. In the St. Louis schools 22,247 were studying German last year; in Cincinnati 16,740; in Baltimore 5,670; in Indianapolis 2,768. In these seven cities, including statistics from private schools, 136,536 pupils were studying German during the last year.

—The improvements around the school for the deaf at Delavan are nearly completed. After the fire in the fall of 1879 a large temporary frame building was built to be used for a school room. When the the brick buildings were erected, this was used for a printing office, gymnasium, etc.; but this summer a fine brick building has been put in its place.

—The 34th Wisconsin State Fair, to be held in Milwaukee, September 13, 14, 15, 16, 1887, offers $25,000 in premiums and purses. Each day offers a special attraction. The buildings which were blown down by the great gale on Aug. 10, are being rapidly replaced, and the accommodations will be complete and ample by the time of opening. Professor Hensler's celebrated Juvenile band, consisting of 30 musical prodigies, has been engaged to furnish music during the Fair. During their

visit to Washington last winter the press paid them extravagant compliments, and Mrs. Cleveland sent the Professor a beautiful bouquet. Speakers of national reputation have been engaged. The railroad companies sell round trip tickets for half fare, and return. All exhibits (except race horses) are free.

—The Secretary of the National Educational Association, James H. Canfield, of Lawrence, Kansas, writes us: "Will you be kind enough to give notice in your next issue, that to ensure receiving a copy of the *Journal of Proceedings* of the session of the National Educational Association just held at Chicago, members should notify me at once, by postal card, of their present addresses and of their desire to secure the volume. This notice is necessary because of the number who are believed to have taken advantage of Association railway rates, yet who have no interest in the proceedings; and also because of possible errors in addresses, due to the unavoidable confusion at the Railway Secretary's office."

—The managers of the Minneapolis Exposition, which opened Aug. 31, and continues to the fifteenth of October, have shown great enterprise in bringing together features both novel and interesting. The knights of labor will make a great parade Oct. 3., and Mr. Powderly will address them. One of the astonishing propositions of the managers is to have Hon. W. E. Gladstone, in England, start the machinery at Minneapolis. There are considerable difficulties to overcome in order to make this possible, but the managers are full of confidence that it can be accomplished. The marine, lighthouse, army, navy, and mechanical display of United States will be the greatest since the Centennial. In the navy display will be two striking models of new war vessels to be built for the government. In fact in every department it has been the aim of the managers this year to surpass anything they have attempted before.

—The State Superintendent has issued in an eight-page folder "Rules and Regulations for Public School Libraries of the State of Wisconsin," prescribing the form of record to be kept by the town clerk, suggesting cautious and outlining necessary rules for the management of the libraries.

—The caution which is needed in teaching temperance to school children is well illustrated by what Gen. Grant says: "I know from my own experience, that, when I was at West Point, the fact that tobacco in every form was prohibited, and the mere possession of the weed severely punished, made the majority of the cadets, myself included, try to acquire the habit of using it." The rebound or reaction from the teaching needs to be thought of as well as its more immediate effects.

—In the public schools of Milwaukee for the past year twenty-seven per cent. of the children enrolled were between 4 and 7 years of age, seventy per cent. between 7 and 15, and three per cent. between 15 and 20.

—Supt. Anderson, of Milwaukee, says in his last report: "The teacher's tenure of office is more secure than services in any other occupation or profession. It is more secure than government service, than service under corporations, and it is questionable whether anything may be added to its security without destroying entirely the important incentive to effort which makes retention in service depend upon usefulness and ability. The teacher who does his duty, is fairly dilligent, manages the class with ordinary skill and whose character is above reproach,

need stand in no fear of politicians or the friends of politicians who desire his place for some favorite. If political influences or personal feelings enter at all into the filling of teachers' positions, they certainly have nothing to do with the position when once occupied. When the teacher is in she is in, and she is there to say. It is not her place that people desire who have favorites to care for; it is the place after she has resigned. The teacher may be even a little bit derelict, self-satisfied and pooh pooh the suggestions of her directors as regards the advance of her work — and her place is still secure. The number of removals for inefficiency when compared with the whole number of teachers, is remarkably small — so small that one of two facts explains it. Either inefficiency is extremely rare, or else it may hide itself behind intrenchments or under covers that defy discovery and rout. The fact may be stated thus: it is very much easier for an incompetent teacher to retain his or her place, than it is for commissioners to fill such place by another appointment. This is positively true, and yet we are entertained now and then in the columns of educational papers and from the lips of would-be wiseacres with platitudes about tenure of service." This may be true of Milwaukee, and probably of most large cities. In smaller cities it is our impression that most of the changes result from the disposition of the teachers themselves to seek for larger salaries or for novelty by change. In the country alone the wretched theory that a new teacher is to be sought each term or each year still survives.

— This report says of the system of promotions on recommendation of the grade teachers, "It has not been followed by those calamitous consequences which some supposed would result from the abandonment of that modern fetish (examinations) of the graded system. Classes are now promoted without examination and on the teacher's estimate. The standard of schoolarship has not been lowered. Unmerited promotions have not embarrassed the teachers who receive pupils promoted on record or estimate. Teachers have shown no diminution in zeal nor manifested any lack of energy since the supposed indispensible spur of examination has been removed."

— *School Education* (St. Paul) says: "By act of the State Normal Board, at the recent annual meeting, and on recommendation of the president of the school, the Preparatory Department of the Mankato Normal School was abolished, one year sooner than the time previously fixed by the board. This removes all preparatory work from the Minnesota Normal Schools, and completes an era in their progress. It is a singular fact that in the Wisconsin Normal Schools, much older and better endowed than ours, a large amount of preparatory work appears to be still done. The Whitewater School, located in the oldest and richest part of the State, reports an enrollment of 74 in the Preparatory Department, for the year just closed, while the Oshkosh School reports 189 in the same grade, for the same year."

— The following additional settlements of school principals have come to our knowledge during the past month: A. P. Delaney goes to Columbus; S. F. Withron, from Ohio, to Beaver Dam; F. W. Winter, a graduate of the State University this summer, to west De Pere; A. P. Winston, also a graduate this summer, becomes assistant in the Racine High School; and O. H. Ecke, another becomes principal at Menomonee Falls; C. W. Ca-

been becomes principal at Neenah; R. B. Dudgeon at Menomonie; Charles M. Fox at Merrillan; Lee Swift, formerly assistant at Elroy, becomes principal at Hillsborough, and Mr. E. V. Wernick assumes charge of the third ward school in Racine; J. G. Adams goes from Bloomer to Merrill; and Mr. Hazard, from Michigan, goes to Prairie de Sac.

—The students of the Wisconsin Summer School expressed great satisfaction with the character and extent of the work done in the school. The following preamble and resolutions, prepared by a committee appointed by the students and composed of Dwight Kinney, I. N. Stewart, M. M. Lakin, J. C. Wilson and G. S. Parker, were unanimously adopted at their meeting, Aug. 10:—

WHEREAS, We feel that we have been greatly profited by our attendance upon this session of the Wisconsin summer school, organized under the auspices of the Wisconsin Teachers' Association; and

WHEREAS, We desire to see this school continued and its usefulness to the teachers of the State extended:

Resolved, That we express our high appreciation of the excellent opportunities here offered to teachers for improvement in their profession; and that we respectfully urge upon the State authorities the importance of establishing this school upon a permanent basis and of providing for the extension of its facilities from time to time, as circumstances may seem to demand.

Resolved, That we tender to each of the several teachers of the school our hearty thanks for their skillful, painstaking and patient efforts in our behalf.

Resolved, That the secretary of this meeting be requested to furnish copies of these resolutions to the State superintendent of public instruction and to the secretary of the summer school; also to secure their publication in THE WISCONSIN JOURNAL OF EDUCATION.

—There has been filed with the superintendent of public instruction a claim of $3,076.67 for Milwaukee county against the State, as remuneration for teaching deaf mutes under the laws of 1885 and the amendment of 1887, which makes provision for the education of such pupils by the counties in which they reside. Counties so instructing its own mutes receive from the State $100 for each pupil so taught 180 days of the year, with not less than five hour's session each day. For pupils taught less than this number of days and hours the county receives a proportionate amount of the $100. The report shows that during the school year in Milwaukee five teachers were employed in this work and thirty-five pupils were instructed. For the year ending June 30, 1886, under the laws of 1885, Milwaukee county received only $1,875.56. La Crosse county also has a claim of a similar character for $342,-50. These are the only counties that have as yet attempted the instruction of resident deaf mutes.

—Principal L. S. Hurlburt, of Darlington, has been appointed professor of mathematics in the University of Dakota, at Vermillion.

—There are fifty-nine private schools in the city of Milwaukee, with a total enrollment of 14,381 children.

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WOMAN'S WORK IN EDUCATION.

In the conclusion of Tennyson's *Princess*, little Lilia, touched by the sequel of the tale to which she has listened, says to her aunt, "You—tell us what we are." The question passed unanswered the story tells us; and, notwithstanding the rapid progress which women in the 19th century are making toward its solution, it remains unanswered, because the evidence that must go to the making of the final verdict, is not yet all in, the revelation of woman's full powers having but just begun.

The old, and almost universal, idea of women, an idea which is now gradually losing ground, made her of secondary purpose in the order of creation. According to this idea, she was not a distinct being laying direct and immediate claim to the opportunities of life in her own right, but the servant of man, for whom she was created, and through whom only she possessed a value. How this idea became embedded in the human mind, the unresisting mind of women as well as the mind of man, we cannot here determine; but it finds its parallel in history in the doctrine of the divine right of kings and nobles, submission to which enslaved the mass of humanity through many centuries to the will of the self-appointed few. Both ideas probably had their origin in the principle which was then the settled rule of action, that might makes right. Proof that the doctrine of woman's secondary importance was wide-spread, is found in the literature of all peoples and all ages, both sacred and profane. Saint Paul in his first epistle to the church at Corinth, says, "The head of every man is Christ, and the head of the woman is the man. A man indeed is the image and glory of God: but the woman is the glory of man, neither was the man created for the

woman, but the woman for the man: for this cause ought the woman to have a sign of authority upon her head." Fortunately we are not obliged to regard this as the language of inspiration, for Saint Paul himself says of it, "Concerning this I have no commandment of the Lord; but give my own judgment." Perhaps nowhere in literature is this idea of the destiny of woman more clearly and concisely set forth than by Milton. In speaking of the service for which Adam and Eve were formed, he says,

> "He for God only, she for God in him."

And elsewhere he makes Eve say to Adam,

> "My author and disposer, what thou bidds't
> Unargued I obey.
> God is thy law, thou mine, to know no more
> Is woman's happiest knowledge, and her praise."

The Hindoos carried out this idea to its logical conclusion by *Suttee.* But it was reserved for Brigham Young to cap the climax by teaching that only a woman sealed to a man in marriage can possibly be saved, thus making heaven, like earth, dependent on man's favor.

These ideas mark the age in which women have been regarded as minors and have lived under authority. By this order of things they have been relieved of public responsibility and sheltered from public criticism, a condition which is in the estimation of many men and many women highly desirable, and worthy above all things to be perpetuated; but which, it can hardly be denied, has resulted in great waste of woman's powers of happiness and usefulness. Opinion is more steadily changing as to the value and place of women in the economy of human life, and women themselves are slowly coming to see that woman's duty, like man's is the fulfillment of the whole moral law, the attainment of every human virtue, and that in her own right, and in behalf of herself and of society. This clearer vision of the possibilities and powers of her own nature markes the birth of woman into a higher, a more useful, and a more truly womanly life. In the world's awakening that followed the death-like sleep of the Middle Ages, woman was left asleep. Michelet said, "The great achievements of the Renaissance were the discovery of the word, and the discovery of man." He said truer than he meant; for it has been reserved for the 19th century to discover woman. In this age, at last, women are attaining to self-conscious freedom. The real quality of this new birth is intellectual. It is the emancipation of

the reason of woman from the thralldom of authority and custom; it is the attainment of her majority by which, if ever, she is finally to take a responsible place among the citizens of the nations and the world. As centuries ago it was scholarship that revealed to men the wealth of their own minds, the dignity of human thought, the importance of human life, so now it is scholarship—the higher education of woman—that shall liberate the reason of women from the dungeon in which it has slept, and reveal to them the consciousness of their own spiritual freedom, and their own power of self-determination.

This new birth of woman is not yet complete. Her evolution still goes on, a progress of effort. It is as such, that its incidents engage our attention and enlist our sympathy. Victor Hugo said: "The woman's movement is the endeavor to win equality before the law, freedom from the bondage of custom, access to the opportunities of self-support, intellectual education, and the just rights of person and property."

The higher intellectual education of women needs no defense in an audience like this. It may, however, be interesting and instructive to consider for a moment in what directions this higher education may be expected to be of benefit. Sidney Smith, in an essay written eighty years ago "to recommend a better system of female education, in order that the attention of women might be turned from the trifling pursuits to which they were condemned," said: "If you educate women to attend to dignified and important subjects, you are multiplying beyond measure the chances of human improvement by preparing and medicating those early impressions which always come from the mother, and which in the majority of instances, are quite decisive of genius. The instruction of women improves the stock of national talents, and employs more minds for the instruction and improvement of the world; it increases the pleasure of society by multiplying the topics upon which the two sexes take a common interest, and makes marriage an intercourse of understanding as well as of affection. The education of woman favors public morals; it provides for every season of life, and makes a woman when stricken, not as she now is, destitute of everything, but with the full power and splendid attractions of knowledge." Dr. Romanes, than whom no one is more persistent in respect to the mental differences between men and women, arguing from the law of heredity, says in a recent article, "In my opinion, if we encourage women in

every way to obtain for themselves the intrinsic advantages of learning, it is as certain as anything can well be that posterity will bless us for our pains."

Perhaps of all directions in which the higher education of woman will be of value, that which receives least attention, but is destined to be most influential, is the increase of public spirit among women.

The purely conventional, and wholly sentimental, type of woman, the delight of Noodledom, who has been taught to find her only objects in life and her sole hope of salvation, within the four walls of "a cottage just large enough for two," and the narrowly and blindly domestic woman, whose three-score years and ten have held no greater epochs than marriage and meal-times, are destined to be swept away by the inevitable wave of mental evolution now gathering force in women's lives. But in their places shall come women, free from sentimentality and small-natured dullness, but full of sensibility, with a cultivated intellect and a trained will; women with breadth of view, an interest in affairs, a sense of relationship to the great problems of life, and insight into their solution. Such women will show in their daily lives and bearing those rich fruits of experience which distinguish the broad from the narrow mind; and, if we may trust the signs of the times, this newly-awakened public spirit among women will eventually change the whole aspect of civilization.

Among all the ends that women aim at in this movement toward a better day, there is none of more vital necessity to them than access to the opportunities of self-support. Without going into statistics to show that a surplus of women in certain localities or nations demands that they be self-supporting, without going to political economy to prove that a large unproductive class without capital is a burden to society, let us simply look around us at the instances which every community furnishes in abundance, and we shall see that it is not given to women as a sex, but only to a small minority of them, to choose between work and idleness, between going into the battle of life, or sitting at home at ease while it is fought for them by others. After such examination into the conditions of real life, no one can doubt that the necessity is laid upon women to be not only self-supporting, but also to support others. In short, women want bread, for themselves and for those dependent upon them; and in order to have full access to the opportunities of self-support, they must secure those other things for which they ask, name-

ly, equality before the law, freedom from the bondage of custom, intellectual education, and the just rights of person and property. Anything less than this falls short of a fair opportunity. Miss Anthony has argued for years with exceptional logic and forcible illustration, that women need the ballot as bread-winners, if for no other reason. It is undeniably true that in this struggle for bread, women are now at a disadvantage conditioned by other causes than any natural limitations of sex. Nobody in particular is to blame for this. The bondage of custom is upon us all. And nobody can finally correct this condition of things but women themselves. Liberty is the fruit of the spirit. The experience of women to-day has been that of every uprising race or class since the world began. It is useless to quarrel with the facts; it is wiser to fix the gaze on future possibilities, and with united and steady effort, seek to make them facts in the lives of generations yet to be.

One of the wost unfortunate things that could happen in connection with this woman's movement, would be the establishment of a spirit of rivalry between women and men. It could in no sense be wise, and it certainly is not necessary. Plato teaches in the *Republic* that the pursuits of men and women should be the same, and to this end they were to have a common training and education. He contends that all the natural gifts are scattered about indifferently among men and women; that woman should be the companion of man, and share with him in the toils of war, and in the cares of government, and that she should be similarly trained both in bodily and mental exercises, and should lose, as far as possible, the characteristics of the female sex.

Modern science quite universally takes the opposite view of the question and contends that sex conditions mind and purpose as well as body. It claims that women were created mentally inferior to men, and destined to the pursuit of different ends by different means. Modern science, however, holds its opinions open to modification by new facts; and the facts are that women in all civilized countries are doing in this generation things they never did before, and doing them marvelously well, so that the scientists of the future will reckon with a host of facts not now included in the count. Moreover the argument of woman's mental inferiority is not really to the point, as is clearly seen and stated by Mrs. Fawcett. She says: "No one of those who care most for the woman's movement, cares to prove or maintain that men's brains and women's are exactly alike, or exactly equal. All they ask is that the social and legal

status of woman should be such as to foster, not to suppress, any gift for art, literature, learning or goodness, with which woman may be endowed." But it is doubtless true that the world's best estimate will be that of the poet rather than that of the theorist or the man of facts. The poet says,—

> "For woman is not undeveloped man but diverse;
> Yet in the long years liker must they grow;
> The man be more of woman, she of man;
> He gain in sweetness and in moral height,
> Nor lose the wrestling thews that throw the world;
> She mental breadth, nor fail in childword care;
> Nor lose the childlike in the larger mind;
> And so these twain, upon the skirts of time,
> Sit side by side full-summed in all their powers,
> Dispensing harvest, sowing the To-be,
> Self-reverent each, and reverencing each,
> Distinct in individualities,"

Perhaps the truest thing about this vision of the poet is the prophecy that "in the long years liker must they grow." It is at least certain that the ideal character — the Christ — combined in the most perfect proportions the world has ever seen, the strength and fearlessness of men with the tenderness, humility and gentleness of woman. And if, amid the fleeting things of time, the perfection of human character be God's end in human existence, then it follows in the nature of things, that no real rivalry between men and women can exist, the cause of each being that of the other, and the destiny of both, to rise or fall together.

It is clear that the woman's movement is upon us, and is not to be stayed. In this ferment of change there are two things to do: namely, to preserve those valuable qualities of the womanly character which have been evoked in the long centuries of the past, and to direct the forward movement into the right channels by holding up to contemplation the ideal woman of the future. Real women have their faults—chiefly such faults as have their origin in weakness; therefore by the entrance of women into new spheres of action, society is beset with certain dangers, which, being foreseen, can be avoided. If women resolutely set their faces against these faults, and steadily live superior to them, there is no reason for being ashamed of them, or sensitive about them. And, in the meantime, we may get some comfort from the reflection that women do not monopolize the faults of the human family.

However, to say that men are likewise faulty, is aside from the argument, and only begs the question. Let us then, without malice, and without extenuation, set some of these faults clearly before ourselves, hoping by so doing to steer clear of those rocks upon which human life so frequently makes ship-wreck, the hidden and chartless reefs of character.

One danger that threatens society through the entrance of women into new fields of labor, grows out of the fact, before stated, that women were long regarded as minors and lived under authority. This condition brought about a dependence of soul, which has by some been elevated into an ideal, so that the conventional woman is always conceived as looking up to somebody. This clinging dependence is not only belittling to women, but is also productive of effeminacy among men; and we might well deplore the coming of the day of woman, if this influence were to spread. It works well enough in fiction, but where is the man who has not found it irksome and uninspiring when indulged in by women in some common field of labor. In order to avert this danger to society, women must learn to vitalize sentiment by thought, to enthrone intellectuality above sentimentality. Children properly expect to look outward for guidance, to follow and lean upon some stronger spirit; but there comes a time when childish things should be put away, and if women desire and expect to take their place, full-statured among responsible beings they must rise to the contemplation of ideas, and regarding them face to face, must depend upon their own judgment, and come to their own conclusions. They must learn to set up standards for themselves and move toward them by self-direction. The habit of looking outward to *somebody*, rather than inward to principle, for approval, produces in them that attitude of personality, and super-sensitiveness under disapproval, for which they are so frequently and justly criticised. When women are thoroughly educated not only in schools but in life, they will lay aside these childish things, and will rise into the simplicity and sweet reasonableness of a life guided by principles. Another danger threatening society through the advent of women into new fields of labor arises from the general disposition of women to be satisfied with small things. Through long generations they have habituated themselves to take what was given them, and be content. They cannot be expected at once to outgrow this habit; but, if one half of humanity is content to move in small ways toward little

ends, it must necessarily have its influence upon the other half, and the whole tone of society be lowered thereby.

Again, it has been largely woman's destiny to wait and follow, to have her way and place of life determined for her, rather than to determine it for herself. This particular bondage of custom has operated to prevent women from forming independent and definite purposes in life, in consequence of which they are too prone to pursue a business, not as a vocation, but as an avocation, from which they are liable at any moment to turn aside. Out of this fact arises a certain danger to any particular business in which women in large numbers may come to engage. If marriage put an end forever to a woman's necessity to earn bread as a wage-worker, this condition of things might be regarded as inevitable, a disability of woman ordered in the divine economy, and only to be met by submission. But, in many instances, by death, desertion, crime, drink, business failures, or other forms of misfortune, some within, and some beyond the control of men, marriage lays upon women a double necessity to earn a livelihood. In view of this fact, it would seem wisdom on the part of parents and teachers to train girls the same as boys, to choose some business that will bring them independence, and to pursue it to that end. When such clear and steady purpose controls the lives of women, they will not only do good public service, but when they lay that aside to make a home, that work to which woman always has brought, and always will bring, a peculiar and transendant genius, the homes they make will be all the more worthy of the name, conservators, indeed, of the interests of family and national life.

Women have doubtless other failings that might be mentioned: these suffice for the present purpose. But whether this catalogue of woman's faults be long or short, let us not forget that in all ages and nations there have been women who have risen above these frailties of their sex, and have commanded the admiration of the world by the display of those qualities that distinguish great souls, whether they be souls of men or souls of women. Neither must we forget that by virtue of what time has made them, and just as they now are, women will bring into the conduct of affairs a saintly ideal, a moral power, the value of which cannot be estimated. Lecky, in his *History of European Morals*, says: "The change from the ideal of Paganism to the ideal of Christianity

was a change from a type that was essentially male to one which was essentially feminine."

From what has now been said we may arrive at these general propositions:—

That we cannot now know just what women are by *nature*, because the force of circumstances and the bondage of custom have overlaid that nature beyond the power of analysis to discover.

That we cannot now know what they may become by *nurture*, because sufficient time has not yet been bestowed upon the experiment.

That abundant evidence exists to prove that under favoring conditions, women may achieve greater happiness for themselves, and greater usefulness to the world, in the future than they have done in the past, and that this happiness and usefulness should not, in the interests of humanity, go to waste.

That woman's inferiority of position has been supposed to have compensating advantages in her freedom from public responsibility and public criticism; but that this opinion is untenable except upon the ground of woman's perpetual minority.

That all women are in need of the means of self-support; and that many women, married as well as single, are obliged to earn their own living, and are entitled to gain thereby financial independence.

That in order to have a fair field in which to gain this independence they need and claim equality before the law, freedom from the bondage of custom, access to the opportunities of self-support, intellectual education and the just rights of person and property.

That as they move foreward to occupy the new fields of labor these claims open to them, certain dangers arise to society on account of what women are either by nature or past education.

That as wage-workers these dangers lie chiefly in the directions of dependence upon *outward* in place of *self* direction, and in lack of high ambition and of steady purpose in the pursuit of their chosen work.

That just as they now are they have valuable contributions of character to bring to public service.

That in the enthronement of the Christian ideal the feminine virtues are forever exalted; and that one of the elemental forces in Christianity was the womanliness of Christ.

That there need be no rivalry between men and women, because "woman is not undeveloped man, but diverse;" hence her contribu-

tions to the world's work are essentially her own, and could be brought by no other.

That public spirit among women is on the increase, and that the day of their emancipation from the thralldom of authority and custom is full-flushed with the rose of dawn.

Now, the application of all this to woman's work in education is found in these two fundamental truths: first, all teachers teach most powerfully by what they are; and second, woman's success in the special work of education, is related to, and depends upon, the success of the woman's movement in general.

[*Concluded next month.*]

Rose C. Swart.

OSHKOSH, WIS.

IN THE LIBRARY.—SCHOOL INSPECTION.—V.

25. *Preparation for Inspection of Senior Pupil-Teachers.*—Having thus inspected the teaching of the two junior pupil-teachers, and seen the school dismissed for recreation, the inspector will turn to the two senior pupil-teachers, and inquire as to the lessons which they have prepared to give before him. He will not only call upon the fifth year pupil-teacher to produce the notes which he has made in preparation for the lesson on English grammar, which he is going to give before him (see § 20); but will also request him, and the third and fourth year pupil-teachers as well, to produce their note-books of the past year, in order that he may see what sort of work they have been doing in the way of preparing for collective lessons. In regard to these note-books, and to the notes of lessons written by the pupil-teachers at the collective examination, and to those obvious faults in manner and matter, which are the first things to be noticed and corrected by the inspector when he inspects any collective lesson, the remarks which I have already made respecting the collective teaching of infants by the principal teacher and pupil-teacher apply here also (see §§ 11, 20).

26. *Teaching of Grammar, Geography, and History:—Effects of the Revised Code.*—But there are some remarks which I wish to make in this place, on the teaching of those three subjects, English grammar, geography and history, which, by the Code of 1875, were again authoritatively declared part of the ordinary subjects of instruction in a school

and particularly on the teaching of grammar. I say, again declared to be a part of such ordinary instruction, because the minutes issued to the inspectors in September, 1862, after the introduction of the Revised Code, show that such instruction was always intended to be kept up in elementary schools, and to be tested and reported upon by the inspectors. It is no doubt the fact, that such instruction was largely dropped in the schools, on the introduction of the Revised Code, as is admitted in the Report to Her Majesty of the Committee of Council for Education, for the year 1874 (Blue-Book of the Education Department for 1874–5, page xiii). And it is also no doubt true that in many schools in which these subjects were more or less efficiently kept up, they were not much noticed by the inspectors, after the introduction of the Revised Code. A good deal of unfair blame has been bestowed on the authors of the Code, on the schools, and on the inspectors, for this. We must bear in mind, as regards the blame which is sometimes given to the Education Department,—

(*a*). That it was an essential thing to be assured that the elements were thoroughly done; and that if the effort of the Education Department was a little overstrained in this direction, to the damage of other subjects, it was a fault in the right direction. No great change, or reform, is likely to be perfect at first; and possibly it would have been better if from the very first grants had been made, for these subjects, as well as for reading, writing, and arithmetic, as is now done. But at any rate it is better that we should have first made sure of the elements, and be now gradually creeping up to other subjects, than that, by aiming at too much, we should have run the least risk of making the elements imperfect. Even now, it is a question whether some of the time likely to be given, under the Code of 1875, to geography and English grammar, might not be better employed in English composition, and improved, or extended, arithmetic.

(*b*). As regards the blame which is sometimes given to the schools, it must not be forgotten that the wishes and aspirations of Parliament, as to the results to be obtained from our elementary schools, have always been ahead of the means which Parliament has been willing to put at the disposal of schools for the purpose of securing such results. The schools —all at any rate, except those in the biggest towns—might fairly say to Parliament, "You call upon us not only to secure to each child the possession of the elements, but also to give him some culture. Yet you

decline, on the grounds of expense, and of social and religious differences, to organize us so thoroughly that our time may not be wasted, to supply a competent staff of teachers, or to secure the universally regular attendance at schools." Many of these schools — those for example in rural districts, or those amid a very poor and fluctuating population — could not really do justice to the elementary subjects, and at the same time teach such subjects as geography, grammar, and history. And in so far as the Revised Code forced such schools to give up their more tempting and showy work, and to apply themselves to the drudgery of the essentials, it did good service.

(*c*). As regards the blame which has been sometimes given to the inspectors for their having dropped these subjects in their examinations, it must be remembered, that the Revised Code, whilst it doubled or trebled the inspectors' mechanical and labour in the inspection of the schools, and really, by the great changes it introduced, may almost be said to have forced them into a new *modus vivendi*, gave them at first no additional assistance in the work. They were expected to inspect as many schools in the week, under the Revised Code, as they had inspected under the Old Code, and yet were told to do it in a way which took them three times as long, and tired them incalculably more. If all the inspectors had been from the first supplied, as they are now, with certificated teachers, as assistant-inspectors, to help them in conducting the individual examination in the elements which was required by the Revised Code, and thus to relieve them from some of the mechanical drudgery of their work, they would have gladly applied themselves to the more congenial task of keeping up the instruction in higher subjects.

27. *Difficulty of Teaching English Grammar:— Knowledge of Old English Required.*— But to return to the fifth year pupil-teacher's grammar lesson (see § 25). There is no more difficult subject with which an inspector has to deal, whether in the elementary schools or in the training colleges, than the question of teaching English grammar. The difficulty has two parts — the incurable and the curable. The incurable part may be dismissed in a few words. It lies in the fact that English is a modern and colloquial as well as a literary language, very much altered in the course of centuries, by loss of inflexions and by the general processes of phonetic corruption, from its ancient and much more highly inflected form, or forms; and that, consequently, no person who has not studied Old English, to say nothing of any other cognate German

dialects, can treat English grammar with any safety. This is why so many of those persons who teach English grammar, or examine in it, or write books about it, however versatile and wary they may be, are liable to blunder, to find themselves making mistakes which are ludicrous to the student of Old English, and which make all those who have to deal with the subject feel how unsatisfactory it is, in comparison with arithmetic or composition, for purposes of instruction in elementary schools. To ask a boy to parse "Woe worth the chase" or "methinks," is to demand from him a good deal more than a knowledge of modern English. And, as I say, this evil is, for the purposes of elementary schools, incurable.

28. *Knowledge of another Language, such as Latin, Desirable.*—The curable part of the difficulty of dealing with instruction in English grammar in schools requires more consideration. English grammar is unfortunately taught in our elementary schools by teachers who for the most part are unacquainted with the grammar of any other language. The consequence of this is that they have no power of steadying their thoughts and testing their conclusions in English grammar, by comparison of them with their thoughts and conclusions in the grammar of any other language living or dead. The inspector, even if he does not know anything of Old English or German, is saved from many a mistake into which the teacher falls by his knowledge of Latin; and *it is impossible to overrate the importance of even a little knowledge of Latin for the purposes of an elementary school teacher.* The study of grammar is not of much value, until it can be treated comparatively. It would not be worth while, probably, to require our elementary school teachers to learn Old English or German, for the sake of teaching English grammar. But it is well worth while to make them learn something of Latin; because some knowledge of that language will not only help them in giving grammar lessons, but will enlarge and enlighten their understanding upon the whole range of subjects, from spelling up to history, with which as learners or teachers they have to deal. It is to be hoped that the recent insertion, in the schedule of qualifications required of pupil-teachers, of the column headed "additional subjects" will do something towards remedying this defect in the teachers of our elementary schools. But the degree of effects to be produced by this regulation will be found to depend very much on the inspector. If, when he inspects a school and hears a pupil-teacher giving a grammar

lesson, he takes the opportunity to enquire whether he is studying Latin, German, or any other language than English, and expresses his disapproval, if he finds that that is not the case, both to the pupil-teacher and the principal teacher, it will soon become common for our teachers to have some knowledge of another language besides their own. I look, therefore, upon this great defect in the present teaching of English grammar in our elementary schools, viz., that teachers do not know anything of the grammar of any other language, as a curable defect. I observe that the Education Department is making an effort to amend the defect; and I think that it now rest with the inspectors to push that effort home.

29. *How to Teach English Grammar.*—Another curable defect in the teaching of English grammar as commonly practiced in our elementary schools, is that it is taught as if it were a highly-inflected language, instead of being taught as a language which depends for its construction more upon the position and logical relation of its words than upon their inflexions. The proper way to teach English grammar is not to begin, as in the case of Latin, or of any other highly-inflected language, with the study of the noun, adejctive, and verb, and their inflexions, but to begin with the study of their logical relations; or, in other words, *to begin with the analysis of sentences.* In studying Latin or Greek, it is absolutely necessary to acquire a knowledge of the ordinary inflexions of the noun, verb, and adjective, before any progress can be made with the sentence; and this is also the case to a certain, though a less degree in German, and perhaps also, though to a still less degree, in the case of French. But in the case English it is absurd to waste time over learning the cases of nouns which have lost all their case endings, and have substituted for those case endings structural position or logical relation in the sentence. *What is wanted is to get as quickly as possible a notion of the structure of the sentence and of the logical relation of its parts.* And for this purpose the teaching of English grammar should be begun, and based throughout its course, on the analysis of sentences. The teacher should, immediately after imparting the first elementary notions and general definitions, proceed to the subject and predicate, beginning with the noun and pronoun as the subject, and with intransitive verbs, as verbs of complete predication. He should then pass on to the direct objective relations of nouns and pronouns with verbs of incomplete predication, introducing no more study of

case-endings than is absolutely necessary for the purposes of the pronouns. Number, gender, person, tense, mood, and voice, should be taught as modifications of these relations. Having thoroughly worked these forms and relations of the noun, pronoun and verb, always by means of the structure of a simple sentence, the teacher should proceed to the enlargement of the subject, and thereby introduce for the first time the so-called possessive case-ending of nouns and personal pronouns, the adjective, the noun in apposition, the possessive pronoun, and the participle. Having treated of the simplest forms of enlargement of the subject, he should proceed to the simplest forms of extension of the predicate. In this relation he should first introduce the adverb, showing its use both for extending the predicate, and, by means of the adjective, for further enlarging the subject. He should then introduce the indirect objective relation of nouns and pronouns (such as that which is called, by analogy with Latin, the dative case), always as a means of extending the predicate. All through this course of teaching, it is an essential thing that the children should be required to make and form simple sentences in various ways, so as thoroughly to understand the practical application of what they are learning to the art of speaking and writing correctly. The teacher should then go on, by way of further extension of the predicate, and of further enlargement of the subject, to the use of the preposition with nouns and pronouns. After this he should proceed to easy types of complex sentences; teaching the children the use of the subordinate sentence, and therewith introducing to them for the first time the conjunction, the relative pronoun, and those words such as "why," answer the purpose of a relative pronoun and preposition combined. By this means, he will be able to teach them to distinguish with confidence between the several uses of words—such as those words which are sometimes used as prepositions and sometimes as conjunctions; those which are sometimes used as conjunctions, and sometimes as relative pronouns, and the like. Having thus given the children their first notions of the relations of a subordinate to a principal sentence, he should then return to the simple sentence, and should instruct the children in the various kinds of phrases, in the more difficult uses of the participle, and in the nature and functions of interjections; and after this should go back once more to the complex sentence, and carry on his teaching into the different kinds of subordinate sentences; being extremely careful at this point of his teach-

ing to ascertain that the children see clearly the reason why any given subordinate sentence is substantival, adjectival, or adverbial, by making them always point out the word in the principal sentence upon which the subordinate sentence depends.

30. *Advantage of this Method.*—Some persons may think that this way of teaching English grammar, by means, that is to say, of logical analysis, is more difficult for children than the old method of teaching it by a system of supposed inflexions, and of parsing those inflexions, based on the analogy of Latin; and may imagine that it will be found too difficult for children in our elementary schools. I am perfectly convinced from observation and experience, both as an inspector and as a teacher, that this is not the case. The technical terms which it is necessary to use in teaching grammatical analysis are neither more nor less difficult in themselves than those which it is necessary to employ in teaching arithmetic, geography, or book-keeping; and they are not more difficult than the terms which it is necessary to use in teaching grammar on the old system. As regards all such terms, whether employed in the teaching of book-keeping, or of analysis of sentences, the great point is to make the children have an intelligent understanding of the real things which underlie them, and which they represent, and this can be satisfactorily done in the case of English grammar only by means of analysis. Moreover, teachers who adopt this mode of teaching English grammar, will find that the power of getting quickly at the *sentence* is of immense advantage as a means of interesting the children, and engaging their attention, in what must otherwise appear to them a most dry and unprofitable study. As soon as a child can begin to construct sentences, he feels, as a learner in algebra feels when he is able to solve an easy problem by means of an equation, that he has got the best of answers to that question which children are always asking secretly of themselves, if not openly of their teachers, in their studies, viz.:—"What is the use of all this?" I succeeded, when I was acting as an inspector in Liverpool and Cheshire, in spite of the disturbance of things caused by the recent introduction at that time of the Revised Code, in persuading two or three of the principal teachers in some of the best elementary town schools in my district, to try the effect of teaching grammar in this way to their upper classes; and all those who made the attempt told me afterwards that they were satisfied it was a great improvement on the former method. And I have since that time my-

self taught English grammar to a little girl of nine years old on the same system, and have been more than ever convinced of its utility.

31. *Importance of Inspection of Fifth-Year Pupil-Teachers.*— The probability is extreme that before the inspector has listened ten minutes to a lesson on grammar, from a fifth-year pupil-teacher, he will hear several things of very questionable authority told to the children, and one or two actual mistakes made. Unless the grammar lesson is very easy, and the pupil-teacher usually wary, the inspector will probably soon find that he is out of his depth. He will thus have an excellent opportunity, at the close of the day and when he is speaking to the pupil-teachers about their work, of bringing home to them all the importance, for purposes of general culture, and of improvement in their profession, of learning another language besides their native tongue, and of studying and teaching English grammar all through by means of analysis of sentences. But if the lesson on English grammar is a very easy one, and does not really bring out any illustrative difficulties, or if it happens that the lesson given before him by the fifth-year pupil-teacher is not on grammar, the inspector will stop the lesson after hearing it for a certain time, say for ten minutes or a quarter of an hour, will select a simple passage from one of the prose books used in the school, and will request the pupil-teacher to question the class on that passage. This is particularly important in the case of a pupil-teacher at the end of his fifth year; because, in inspecting his teaching, there lies upon the inspector the responsibility of reporting (under Article 60, of the new Code) whether he has completed his engagement with credit, and having satisfactorily passed his final examination can be specially recommended for immediate service with a provisional certificate. With this responsibility upon him the inspector will, of course, take care to pay full and careful attention to the teaching of the fifth-year pupil-teacher. If this is not his first visit to the school in question, but he has seen it before, he will not only have acquired some knowledge of the capacity and industry of this particular teacher, in a previous part of his course of apprenticeship, but will also have some notion whether the school is one in which the training of pupil-teachers is so intelligently and carefully superintended, that he may feel justified in giving such a special recommendation. But if this is his first visit to the school he will remember that there is no part of his work as an inspector which is more important than this duty of thoroughly testing the fifth-year pupil-

teacher. He will grudge no sacrifice of time for the purpose of doing this properly. And whatever other parts of the inspection he finds it requisite to cut short for want of time, he will not hurry over this. He may learn much of the capacity and qualifications of such a teacher, by requiring him to assist him in the examination of some of the classes in geography, grammar, and history, or in any other subjects besides the elements which are taught in the school, and by looking carefully over his note-book of the lessons which he has given in the course of the year. If the pupil-teacher has not been properly trained to give collective lessons on such subjects, carefully to prepare such lessons beforehand, and to make notes of such preparation with the help and under the superintendence of the principal teacher, or if he displays, in giving his lesson, any of those gross faults of which I have spoken, in treating of the teaching of the younger pupil-teachers, and thus shows that he has not been properly trained even in the rudiments of his profession, it is scarcely necessary to say that the inspector will absolutely refuse to give such special recommendation, and will speak very seriously to the principal teacher on the subject at the end of the day.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

SUPPLY AND WASTE.

We have studied thus far those organs and processes which are concerned in the production and regulation of the various bodily movements, together with those concerned with the flow of blood through the body and with the regulation of the amount of blood which should be sent to the various organs at different times. In short, we have studied mainly the *motion producing* and *motion regulating* organs and processes of our bodies. We have measured—roughly to be sure—the ability of some muscles to produce motion, that is, to do work, and we have seen that the more work they do in a given time the more blood the heart must send through them and the faster must we breath. We have seen that whenever or wherever energy is expended, that is, work done, by us it is at the expense of food eaten and oxygen breathed, and it is a further study of this very important fact we must now make.

STUDY OF A WORKING STEAM ENGINE.—OBJECTS OF THE LESSON:

To teach that: 1. So long as the engine continues to work it must be supplied with fuel, water and oxygen, and that these supplies must be proportional to the work being done. 2. So long as the engine continues to work, water, carbon dioxide, ashes and heat escape from it as waste products, and that these wastes are proportional to the work being done. 3. The fuel burned is not destroyed but only changed in form. 4. The work done by the engine is the result of the powerful falling of oxygen atoms from the air upon the atoms of the fuel, so that when more atoms fall together in a second of time more work is done.

We are all perfectly familiar with the fact that while a steam engine is at work it must be kept supplied with three things, fuel, water and oxygen. We know too, that the more of these three things are consumed in the engine in a given time the more work it will do. We know very well also that while materials are fed into the engine through the whole year it neither greatly increases in weight nor becomes full, so that whatever is put into it must escape again or be annihilated. It is very important that we should understand what becomes of this fuel, and to help us do this let us perform some experiments.

Make a snug little ball of the excelsior shavings used in packing furniture, and set it on fire placing quickly over it a clean, dry, clear glass vessel. Very soon the fire is extinguished but there is lift on the sides of the glass a quantity of water; and no matter how thoroughly you may dry the shavings before the experiment water will always be found on the cold glass after after the burning, thus proving that when wood is burned water is produced. We have often noticed that immediately after lighting a lamp the chimney is for an instant clouded with moisture, and this fact proves that water is also produced when oil is burned, and as this water disappears with the air through the chimney after it becomes too hot to condense it we can understand that a portion of the fuel burned in the engine disappears as water through the smoke-stack.

Dissolve with water a teaspoonful of saleratus in an ink bottle and pour upon this a little vinegar, lowering the bottle quickly into a tumbler containing a little clear lime water. After effervescing has ceased cover the mouth of the tumbler with the hand and gently shake it. The lime water quickly becomes milky. This is a chemical test for identifying carbon dioxide which, in the experiment, was set free from the saleratus by the vinegar. That the air is not the cause of the change observed may be proved by agitating the lime water with only air present.

Next set the tumbler containing a little clear lime water into a two or four quart tin pail. Place a ball of excelsior on a tin can beside and just above the tumbler and ignite it, covering the pail quickly. Ignite the shavings two or three times and then gently shake the pail. On removing the tumbler the lime water will be found milky as before, thus proving that when wood is burned carbon dioxide is produced.

Hold a drop of clear lime water suspended from the point of a pencil or glass rod over the chimney of a burning lamp; it will become milky as may be seen by looking at it against a dark surface, thus proving that not only water but carbon dioxide is at the same time escaping from the chimney of a burning lamp; and as the fuel of the lamp disappears through the chimney as invisible steam and carbon dioxide we are prepared for the statement that nearly all the fuel used in the steam engine escapes through its smoke-stack in the form of water and carbon dioxide. The ashes left in the fire-box and the soot and cinders comprising by far the larger part of the small remainder. Besides these waste products there are more or less heat escaping all the time from the engine which cannot be made to do work, and hence an additional amount of fuel necessary to produce it is always required.

It is difficult at first for the mind to be convinced that so much solid matter can really disappear through the chimney or smoke-stack, the easier belief being that a larger portion is really destroyed—"burned up"—and hence, if it is possible, another experiment should be given.

Place the handle of a small deflagrating spoon through a cork fitting a 7 inch by 1 inch test tube, in which has been placed about one inch of water. Cut two deep longitudinal slits on opposite sides of the cork to allow ingress and egress of air. Place in the spoon a piece of phosphorus a little smaller than half a pea, then introduce it into the test tube, pressing the cork just tightly enough so that the whole may be hung by a hook bent upon the handle of the spoon to one scale pan of a sensitive balance. After accurately balancing the test tube with its contents remove the spoon and ignite the phosphorus, returning it quickly to the test tube which should then be replaced upon the balance. White fumes will fill the tube and a little will escape into the air, but in spite of the escape the contents of the test tube will become heavier. The oxygen in the tube unites with the phosphorus producing the white smoke, which is rapidly absorbed by the water leaving space into which a fresh supply

of air falls from the outside, thus increasing the weight, proving that the phosphorus is not destroyed but only changed in form.

We must next learn how the union of oxygen from the air with the fuel in the fire box results in the motion of the piston which drives the machinery attached to it. Strike the hands rapidly and forcibly together and at the end of the tenth stroke allow the palms to remain in contact. A sensation of warmth is felt and heat has really been produced; the motion of the hands as a whole has been changed into vibrations of the molecules which compose the hand, and it is this increased molecular motion which affects the temperature nerves giving rise to the sensation of warmth. Now rub the palms of the hands vigorously over each other during about 15 seconds. A much higher temperature is experienced, and in this case the motion of the hands has been converted into motion of the molecules in the hands, the higher temperature being due mainly to the fact that the heat was not allowed to escape during the experiment. Now something very much like the collisions of the hands in our first experiment takes place in the fire box of the engine. There is a powerful force, called chemical affinity, which causes the oxygen atoms from the air to fall with great force against the atoms which compose the molecules of wood or coal, and these collisions give rise to strong vibrations of the fuel molecules producing a multitude of thrusts against the sides of the fire box which are in contact with the water to be heated and very soon the molecules of water are thrown into such an intense state of vibration that they can no longer be held together but fly off in the form of steam, beating against the head of the piston like so many ball clubs, and, just as the ball is driven far out into the field while the bat stops, so the piston moves with its great load while the billions of tiny molecules come so near stopping as to be almost converted into water again.

Comparison of the Working Human Body with a Working Steam Engine.—Objects of the Lesson: To teach that: 1. So long as the body continues to do work it must be supplied with oxygen, water and solid foods, and that these supplies must be proportional to the work being done. 2. So long as the body continues to work water, carbon dioxide, solids dissolved in water and heat escape from it and these wastes are proportional to the work done. 3. The work done by the body is the result of the powerful falling together of the

oxygen atoms breathed and food eaten, so that when more atoms fall together in a second of time more work is done.

We need now to study the supply and waste of our bodies as we have studied those of the working engine. Hold the palm of the hand flat against the window pane during about 10 seconds. On removing it a wet spot is observed showing that water is escaping from the body through the skin of the hand. Breathe against the window pane. Here also we observe a cloud of moisture condensed, and have proof of the escape of water from the body through the lungs. As in the working steam engine then, our bodies, during life, are continuously pouring moisture into the air, and the whole average amount of water given off from the adult body through all channels daily has been estimated at about six and one half pounds.

Fill a two ounce clear glass bottle about half full of lime water, and with the aid of a tube—glass, rubber, or straw—force air from the lungs slowly through the water. It soon becomes milky, thus proving the escape of carbon dioxide from our bodies as in the case of the working steam engine; and the average amount of this gas escaping daily from the lungs is about 16 cubic feet or more than 2 lbs. Two pounds then, of what the average man takes into his body daily, leaves it as this invisible carbon dioxide gas. We are all familiar with the saline taste which perspiration possesses. We have noticed too the white powder left on the hair of horses when it dries after profuse sweating. This saline taste and the white powder are due to some of the solids formed in our bodies, and corresponding to the ashes left in the fire box of the steam engine, but which are dissolved in the water and thus removed from the body as they are produced. The various solids which leave the body dissolved in water amount daily to about .14 lb., so that when everything is included the total losses accruing daily to the body reach in round numbers, 9 lbs.

There is still another loss to our bodies, as in the case of the working steam engine, and that is heat. Our bodies are never comfortable unless the temperature of them stands above the usual temperature of surrounding objects, and in consequence of this fact more heat is given to the outside world than is received from it.

The steam engine, as we have seen, is a machine for imparting motion to whatever it may be attached to, but, it must always be remembered, the engine does not *create* the motion it imparts to the machinery it

drives, it only transfers the motion of the atoms in the fire box through the steam and piston to that which it drives, and it is in this light we must now consider the working power of our own bodies.

Our bodies, as such, are not instruments capable of creating power or energy; they, like the engine, can only use or transfer some other motion already in existence. We are not able at present to see as clearly as with the engine just how this transfer takes place, but, as in that case, our ability to do has its beginning in the fall of oxygen atoms, which we have taken as food to the acting organs. like muscles and nerve centers. In these acting organs, where the collisions take place, as in the fire box of the engine, the powerful falling together of billions of atoms comes out, in some way unknown to us, as muscular, nervous or heat energy.

Before a steam engine can do effective work there must be an intelligence or engineer to direct it, but about this we have said nothing. So there must be within our bodies a guiding intelligence or mind and about this nothing is to be said in this connection. It is our bodies, as machines to do with, and to care for in the best possible way, in order that they may do, that we are all the while concerned in this study. Powerful as we know the engine to be, still, in the most perfect working form it has yet been put into, it is only capable of using about one tenth or one eighth of the power or energy generated by the falling atoms of oxygen in the fire box. Our bodies, however, are much more perfect machines, for out of them, as muscular energy alone, comes one fifth the energy generated by the falling oxygen atoms.

STUDY OF THE NEEDS FOR FOOD.—OBJECTS OF THE LESSON: To teach that: 1. Food is needed to supply muscular and nervous energy. 2. Food is needed to maintain a uniform temperature of the body. 3. Food is needed for growth. 4. Food is needed to produce digestive fluids. 5. Food is needed to repair tissues.

After having studied the great motion-producing systems of our bodies and their likeness, as such, to the steam engine, we are in a position more fully to realize that the first great and continual demand for food in our bodies is to supply the means whereby the needed nervous and muscular energy may be obtained; but this is not the only demand the system has for food.

In the case of the steam engine, before the force causing the oxygen atoms to fall upon the atoms of the fuel can act to generate the energy

the fuel must be heated to a certain temperature, and never allowed to fall below that again while the action is to be maintained. Chemical affinity acts between oxygen and phosphorus at a temperature which we can readily produce by friction, and hence we use this to kindle the fire on the end of the match. Sulphur again, unites with the oxygen at the temperature the burning phosphorus readily produces, and hence it is used in connection with the phosphorus; and by the time the sulphur has been burned the temperature of the wood has been raised to the point where it takes fire and then maintains the temperature to the necessary hight for continual action; but if by any means the temperature is allowed to fall below the necessary point the fire goes out. If a large cold iron wire is introduced into the flame of a candle it will be extinguished because the temperature of the burning materials is cooled low. When we blow out a light it is by forcing cold air over the wick so rapidly as to cool it below the point where oxygen will unite with it. Just so it is in our bodies; in order that the oxygen atoms may be made to unite with the other atoms in the body a temperature of about 98 F. must be maintained, and if the temperature is allowed to fall much below that point death follows, as the flame is extinguished. There is a temperature so high that water would be decomposed, and, of course, so high that the oxygen and hydrogen could not unite even if they were brought together; so there is a temperature above which our bodies cannot go and allow the vital processes to continue. This temperature is only a little above 98 F. and hence we have a set of organs, yet to be studied, whose office is to pour water upon the surface of the body when the temperature is running too high. We eat then to keep cool as we do to keep warm.

It is manifest enough that until the body has attained its full development food is demanded for growth.

We shall find, when we come to study the organs which prepare the food for the body, that many of the things we are obliged to eat must be changed chemically before they can even enter the body proper, and to do this work certain digestive fluids must be produced in the body and poured upon what has been eaten. To produce these fluids creates another demand for food. Then again, as we have already seen, the life of the indivual cells is much shorter than that of the tissues of which they form a part, and hence food must be continually supplied which contains the materials necessary to rebuild these cells.

EDITORIAL.

TEACHERS are not readers, said one of the speakers at the National Council; and the remark was accepted by men of wide experience as true. Teachers as a class are not readers. They do not seek to increase their own knowledge from year to year, to keep their own minds fresh and active by contact with inspiring literature. They have no real interest in the things of the understaning. On the other hand, they are satisfied to do merely routine work, work which does not require them to grow by making continually larger preparation for it; work which may be done over and over again in the same way, which merely consists in rehearsing the matter of certain text-books. They have no line of study outside of school work in which they feel delight. They are intellectually indolent. It seems almost unnecessary to point out how seriously this diminishes their effectiveness. Teachers are influential by reason of what they are. If they are cultivated and refined they tend to make their pupils so. If they have a genuine interest in science, history or literature this is infectious. If they teach out of a full mind, out of a mind kept fresh by contact with the living sources of knowledge and inspiration, their teaching has a corresponding richness and vitality. If their own minds are kept keen and active by continual effort they will be able to make others keen and active. Not to read and grow is to fail in the essential part of teaching, which is to influence the ideals and determine the bent of young people. If it were possible to exclude from the schools every teacher who is not reading and growing, a great advance would quickly be apparent in the results of school work. We realize fully that there are many exceptions to the truth of this general remark, but it is necessary to emphasize the drag upon school work which results from the intellectual indolence of a large body of teachers, and to insist that the stringency of the tests for admission to the teachers' calling should be increased until those who have no real interest in the things of the understanding shall find it impossible for them to gain entrance.

THE INSTITUTE PROBLEM, so called, is how to make the Teachers' Institutes more effective. The discussion of it now going on indicates a wide spread belief that this instrumentality is not at present so useful as it may be made. If not, the subject deserves the most serious and careful study. It is inexcusable to lay upon teachers the burden and expense of attendance without giving them a full equivalent for their expenditure. This, however, is a slight consideration compared with the interests of the schools concerned. The attendance at the fall institutes in Wisconsin this year probably will fall little if any short of three thousand. Allowing that two thousand five hundred of these persons actually engage in teaching, with, on the average, twenty pupils each it will be seen that the interests of fifty thousand children are involved in the fall institutes alone; and this is a very moderate estimate. We say, therefore, that the institutes must be made as effective as possible. The question what should be attempted in

them is beset with great difficulties, and we have not space to discuss it here. This at least may be said: The institute should emphasize essentials, and keep rigidly out of the "fanciful" line. It is no place for juggling with the refinements of orthoepy, with arithmetical tricks, with "developing" rules of spelling; it is no place for exhibiting individual whims of opinion, or wasting time over "unconsidered trifles" of any sort. A good institute drives earnestly and vigorously at the main essentials of common school teaching, keeps steadily in view practical results in the work of the schools, and observes proportion in its own work, giving time and strength to topics according to their real importance. To be able to do this one must have generous culture and breadth of view, and have given sufficient time to the study of education to appreciate the real relations and relative significance of the various elements of school work. He must not waste time, or allow himself to be side-tracked, or fail to discern correctly the most important needs of his institute, or lack tack and skill to meet them clearly and adequately. Discernment, adaptability, strength in teaching, power to awaken sympathy and enthusiasm—these are needed in a higher degree in an institute teacher than in one in charge of a public school, inasmuch as his results must be secured in so much shorter time. It is deplorable to witness the waste of opportunity which comes from incompetence in such a position. We need in the institutes the very strongest teachers who can be secured—and no others. We need besides consecutive attendance. The coming and going during the session is demoralizing to the institute, discouraging to its conductors, and shows that teachers come for the form and not the work.

THE *Century Magazine* for September under topics for the time contains a very appreciative notice of the late President Mark Hopkins, whom it justly styles "a great teacher." His wonderful influence, though spending his life in one of the most rural parts of New England, is a striking illustration of the fact that really able teaching does not depend for its effect upon a grand sphere of action. It makes itself felt from any point, and felt in time all over the country. The writer remarks: "In the vast majority even of good teachers, it is impossible to resist the conclusion that they become accommodated in their own minds to the minds of their pupils. Sympathy being the essential requisite, they unconsciously fall into the habit and scope of thought of their students—'subdued to what it works in like the dyer's hand.' It is the fatal tendency in teaching to shrink towards the capacity of those taught—a tendency that able teachers resist by constant watchfulness and severe studies." This states very clearly a common assumption in regard to teaching, the correctness of which we are inclined to call in question. There is implied in it a judgment upon teachers as a class, and teachers in high position, that they are inferior. We are not ready to admit this. Teachers, judged by the standards we can consider applicable, are not thus inferior. In authorship, in scientific investigation, in leadership, the higher ranks of teaching show fully as much ability as those of other professions. We are satisfied that an impartial investigation will show that this

"fatal tendency of teaching," if it exists, has been resisted and overcome by as large a percentage of those in the calling as of men in other callings have resisted their fatal tendencies. Moreover, we doubt the existence of the tendency, if that means anything peculiar to teaching. Teachers are lazy and short-sighted like men in other callings. They do what they are obliged to do — and too many of them little more than that. The routine of life limits them as it does other people. But the notion that they have to come down to their pupils, and are cramped and belittled by this coming down, will not bear investigation. The effort to make a truth plain to a younger person belittles no one; it rather increases the clearness of his own thought and expression. No one is cramped by teaching, save as it absorbs his energies too fully for him to expand into further knowledge. Indeed, good teaching, in any except elementary schools, does not come down to the students; it lifts the students up to the teacher's level. Too often this is no lift at all; in some cases it is really a pulling down. But teaching is always better in proportion to the breadth, and vigor, and knowledge of the teacher, which becomes an inspiration to his pupils. The article very truly says: "The success of each (great teachers) is due to the fact that they preserved the full measure of their mental powers, and at the same time had the faculty of laying powerful hold of the young mind. A great mind, enlisting young men, and drawing them by the secret charm and power of his divine gift up to himself without descending in his own mental habit to them — such was Dr. Hopkins. He carried into the class-room the free action of his own mind and also its total action. Many men are able to do this who fail as teachers, but Dr. Hopkins possessed the knack of bridging the space between his own lofty thought and the mind of the pupil, and so getting him up to his own level. This is true teaching — inducing in the pupil the thought and feeling of the teacher." This is very admirable. It is the ideal of true teaching. That which falls below this, falls not because of "the fatal tendency of teaching," but because of the far more fatal inferiority of the teacher.

THE increase of free high schools in this State has gone forward with great rapidity of late. In 1880 there were but eighty-five in Wisconsin, while at present there are one hundred and forty on the list in the State Superintendent's office, and several others are in process of formation. Thirteen were added to the list in 1886, and eight have already been added during the present year. This increase is not due in all cases to the formation of new high schools, for one after another of those in existence in the State at the time of the passage of the present law, in 1875, have placed themselves under its provisions. Not all have yet done so; some eight or ten important high schools still remain independent, among them a few of the largest in the State. But there has been a rapid development of new high schools within the last seven years, and these have all, so far as we know, organized under the law of 1875, except the three township high schools, formed under the law of 1886. It is unfortunate that the means are not at hand for determining just how many of the fifty-five schools

added to the Superintendent's list in these seven years have been actually organized within that period, but we must content ourselves with the statement that the majority of them are new; and all of them have in that time been added to the State list. Instead of dwelling upon the satisfactory evidence of educational growth thus afforded it will be more profitable to think of the responsibilities involved. These high schools are at present without any efficient State supervision. They are not visited by any persons with authority from the State to inspect them. Supposing that it were possible for a man to visit four of them in a week,— which certainly would be very difficult on account of distances to be traveled— it would require the whole time of one man during the school months to visit each of them once in the school year. It is clearly impossible, therefore, for the State Superintendent to do this work. Yet we can think of no way in which money could be more profitably used to promote public education than to provide for such inspection. The interest is a large and growing one; it ought to be studied, guided and helped. A wise inspector could give direction to local effort, prevent the adoption of foolish measures, aid in securing the proper equipment of the schools, keep the department informed as to the condition of the schools, and so on. Again, these schools need to be classified on some intelligible plan. Some of them require for admission only the minimum of attainment prescribed by the State Superintendent, while others exact more than a year's additional work; some of them have courses of study three years in length, and some four; some of them are well equipped with apparatus for teaching, and others have nothing; some of them have a large enrollment and others have dropped to a dozen or fifteen pupils. Yet they are, without distinction, known as high schools. They might, for example, be classified into high schools of the third, second and first class, according to their courses and equipment, and thereby a better understanding of them and a stimulus to proper growth would be secured. The development of these schools has been rapid: it remains to provide that it shall be strong and wise.

IN THE SCHOOL ROOM.

SOME THINGS TO THINK ABOUT.

When does the greatest difference between apparent and mean noon occur?

What date in Russia corresponds to March 15, 1887, in our calendar?

Of what use to flowers are the stripes or lines found on some corollas?

Why do bees and wasps sting?

For what particular achievement is each of the following persons noted? (1) Sir Isaac Newton? (2) Captain James Cook? (3) Dr. William Harvey? (4) Sir Richard Arkwright? (5) James Watt? (6) Sir Humphry Davy?

Why does a cracked bell make a disagreeable sound?

WORDS FOR THE WORKERS.

WHAT we need to learn first of all is loyalty to supreme things. There are in human life low, lower and lowest things; there are high, higher and highest things. Food, raiment, art, architecture, the pursuit of the material and beautiful must be subordinate to goodness and truth. "The life is more than meat, and the body is more than raiment." Righteousness is more than riches; charity is above esthetics; truth is higher than the temple, consecration than the altar, and how to be like Christ a weightier problem than the pattern of a dado. —*J. L. Russell.*

THE importance of holding before the eyes of the mind and of the spirit models or ideals worthy of striving after, now becomes apparent. As the wise old Greeks kept in their homes and in their public places statues of the strongest and most beautiful men and women, in order that their children might perceive what they ought to become, so is it meet that the children and youth of our time should have before them models of spiritual loveliness which they will, unconsciously perhaps, imitate. Doubtless the greatest boon that noble men and women bestow upon their kind is not the performance of some specific service, but rather the demonstration that humanity is capable of such excellence, so that multitudes of observers may say, each for himself, "I, even I, may come to resemble him, and so I will."—*J. Whorton.*

SOME TEACHING DEVICES.

I. IN GEOGRAPHY.—I recently observed a lesson in preliminary geography in a second year grade. The outline of work for the year was somewhat as follows:—

Lessons on Animals: That live on the land, in the water, in the air; that live in hot parts of the earth, in cold parts of the earth, in forests, in plains, in deserts, on mountains, etc.

Vegetation: Same as animals.

People: Their kinds of homes; what they wear, eat, and do; the animals they use; the distance and direction of their homes from the pupil's homes.

The teacher began the lesson by saying, "I am thinking of a certain country." The pupils then asked the teacher various questions regarding the vegetation, animals, and inhabitants of the country in order to determine from her answers what country she was thinking of. The following questions will illustrate the nature of those asked by the pupils: Does tea grow there? Does rice grow there? Does the black bear live there? Are there silk worms in that country? Do the people wear wooden shoes? etc. When a sufficient number of questions had been asked to indicate to the teacher that the pupils were thinking of the country she had in mind, she asked if any one could write the name of the country on the board. One pupil was chosen from the volunteers, and wrote upon the board the name "China," which the teacher said was right. She then

in turn questioned them closely on the vegetation, animals, and inhabitants of the region.— *Illinois Teacher.*

II. In Primary Number Lesson — 1. Lost Numbers. Take any number as 10.—

7	9	5	3	1	8	6	2	4
...	...	...	...	...	...	...	...	...
—	—	—	—	—	—	—	—	—
10	10	10	10	10	10	10	10	10

Let the children volunteer to tell what the "lost number" is in each case.

First; weave a story as, "I was setting the table; I placed 7 cups upon the table, I needed 10. How many more did I get?—

I placed 9 saucers, I needed 10. How many more did I get?—I placed 3 plates. I needed 10. How many more did I get?—

I needed 10 forks. I could find only five. How many more did I have to find?—&c.

Second; after the "lost numbers" have been supplied and written in the proper places, erase the upper line of figures, and let the children supply the missing numbers; as any child answers successfully let him write the proper figure in its place.

2. Number Wheels. Addition and Subtraction:

Arrange the numbers 1, 3, 5, 7, 8, 11, 2, 4, 5, 8, 10, 12, in the order given, in a circle with + 3 in the center; also, the numbers 5, 7, 9, 11, 13, 15, 4, 6, 8, 10, 12, 14, in like manner and order, with — 3 in the center.

Let the children volunteer, viz.: "Three and one are four; one and three are four."—"Three and three are six; two threes are six."—"Three and five are eight; five and three are eight," &c.

Or, "Three from five leaves two; two from five leaves three."—"Three from seven leaves four; four from seven leaves three," &c.

3. Multiplication and Division.—

..	..	..	..	..	..	..	..	..	..		
2	4	6	8	10	12	14	16	18	20		
:.	:.	:.	:.	:.	:.	:.	:.	:.	:.	:.	:.
3	6	9	12	15	18	21	24	27	30	33	36
::	::	::	::	::	::	::	::	::	::	::	::
4	8	12	16	20	24	28	32	36	40	44	48

Lead the children to look for any number as 4. It is two 2's; it is one 4.

They find 6 may be made of three 2's; two 3's; one 6.

They find 8 to be made of four 2's; two 4's; one 8, &c.— *Anna Bedlam.*

III. In Reading. In reading, if there is a very dull, poor reader in the class, I would select a paragraph as interesting as any in the lesson, though not too long, and before time for recitation I would tell him in a quiet way, that he might prepare to read that one paragraph, reading it carefully until he is *sure* he can read it well before the class. Then if there be any improvement, try to encourage him by noticing it; perhaps encouragement is what he needs. I usually have a portion of the reading lesson or difinitions copied by pupils on slates or paper, and brought to class for correction. Sometimes I appoint two or three

to correct all the work; then again I have the members of the class exchange slates and correct each other's work, care being taken to correct all errors in spelling, punctuation, and capital letters. An interesting mode of recitation to illustrate inflection, consists in arranging a series of sounds, letters, figures, or words in the form of questions and answers, and allowing one portion of the class to put the questions and the other give the answers.—*Marshall Messenger.*

IV. WORD OR NUMBER GAME. The promise of a word or number game to all who have perfect lessons, is one of the best incentives for a good recitation. I write upon stiff paper (cut in squares), words used in reading lessons, and place them upon the counting table. The pupil who fails to pronounce the word he has drawn, must wait his next turn. The one who has the greatest number of words, of course, wins the game. In the same way, play the number game.—*Anna E. Vaile.*

LANGUAGE EXERCISES.

I. COMBINING. Make a story by combining each of the following groups of sentences into one: 1. The whalebone whale feeds on very small animals. These live in the sea. These move in immense shoals. The shoals are many square miles in extent. 2. His mouth is very large. Its lower jaw makes an arch. This arch is large enough for a man on horse-back to pass under. 3. Whalebone is found in his mouth. It is attached to the roof. It forms a sort of sieve. The sieve catches the small animals.

II. LETTER-WRITING. 1. Write a letter to Messrs. T. R. Brown & Co., requesting a statement of your account, with a view to settlement.

2. Write the letter with which the statement of account is supposed to be transmitted.

3. Write a letter of inquiry concerning an applicant for a place.

4. Write an answer to the last letter, giving the applicant a good character.

5. Write a second letter, declining to recommend the applicant.

III. EXPANDING. Expand the following simple sentences into compound or complex:

(1.) Owing to this unforeseen delay we missed the train. (2.) His resignation will necessitate another election. (3.) He was released on giving bonds for the payment of the amount. (4.) Unfortunately we had not time to examine them. (5.) He denied the possibility of such a thing. (6.) Not suspecting his intention I handed him the papers. (7.) He seemed disposed to question the correctness of the answer. (8.) Sending for the messenger he questioned him closely.

IV. CORRECTING. Correct the following:

Everybody has a right to look after their own interests.

The ebb and flow of the tides were explained by Newton.

Not only he found her busy, but pleased and happy even.

Great numbers were killed on either side.

Every one thought to have his special views attended to.

The next New Year's Day, I shall be at school three years.

I should be obliged to him, if he will gratify me in that particular.

He was scarce gone when you arrived.

V. WORD FORMS. 1. Write the plurals of beau, nebula, datum, phenomenon, axis, series, sir, seraph.

2. Use each of the following verbs in a sentence (a) containing *yesterday;* (b) containing *to-morrow;* (c) containing *has* before the verb: Blow, break, choose, come, do, draw, drink, eat, freeze, go, grow, know, lay, lie, ring, see, set, sit, shake, speak, take, tear, throw, wear, write.

5. Form as many words as possible from the following: Define, compose, form, value, change, acquit, critic, merchant, tyrant, fancy, dry, omit, whole, compel, tall, debt.

INTERMEDIATE ARITHMETIC PROBLEMS.

1. How many rods of fence will be required to enclose a field 1 mile long and ½ mile wide?

2. At 35 cts. a sq. yd. what will it cost to plaster the four walls and ceiling of a room 27x25 ft. and 12 ft. high?

3. How many sheets of tin, containing 2 sq. ft. each, will be required to cover two sides of a roof 30 ft. long, 18 ft. wide?

4. A pile of wood containing 2½ cords is 8 ft. long, 8 ft. wide. How high is it?

5. I bought 2 qts. twice a day, at 5 cts. a quart: What was my milk bill for the months of January, February, March, 1880?

6. In what time will 24 men lay a wall that 6 men can do in 12 days?

7. How many miles will a person walk in 15 days, walking 6 hours a day, at the rate of 120 rods an hour?

8. To what must the product of .75 and .628 be added to make 15.015?

9. What will it cost to fence a rectangular field ¼ of a mile long and 660 ft. wide, at $.85 a rod?

10. At 10 cts. a square yard, what will it cost to sod a lawn 8 rods long and 5 rods wide?

OPENING EXERCISES FOR PRIMARY SCHOOLS.

The opening exercises in a primary school should be short, suited to the child's comprehension, varied from day to day, and sufficiently interesting to hold the complete attention. Those exercises should be employed which have in view both instruction and moral training.

Collect a series of facts and anecdotes from the lives of good people, each of which shall teach some important lesson, such as patience, truthfulness, bravery,

kindness to people and animals, self-denial, heroism, patriotism, generosity, etc. If possible, obtain a reliable picture of the person who forms the subject of the lesson. Let the children handle it, if it be small; if large, hang it upon the wall where it can be easily seen.

A series of texts (arranged in alphabetical order to assist the memory) may be taught the pupils, each text being the subject of a lesson or series of lessons. The meaning of the text should be thoroughly understood by the pupils before it is formulated; otherwise, as is often true, the words alone remain in the memory and are like an empty shell, the rich kernel being overlooked.— *Indiana School Journal.*

MATHEMATICAL SECTION.

THE DRILL IN FUNDAMENTALS.

One chief end sought in the study of arithmetic in school, is the attainment of faculty in reckoning. To secure this rapidity and accuracy are necessary, and both are born of repetition — untiring, painstaking repetition. It has long been held in advanced educational circles that the child to be taught must know the steps and the reasons therefor, in any process, and much stress has therefore been laid on full explanations of each part of the work. If we consider that to give special prominence to any idea or principle is necessarily to put others in the background, it will not seem strange that as "explanation" became common, less energy was given to thorough drill on the process. But here certainly, if anywhere in our educational work, it must be true that one "learns to do by doing," and neither quickness nor accuracy are to be got from analysis alone. It will hardly be claimed by reasonable men that the public schools should make all pupils expert accountants, competent to solve all business problems at a moment's notice, and to add long columns of figures as quickly and correctly as a bookkeeper whose entire day's work is of that character. Such ability is as much technical, professional skill, as the knowledge of the proper form of a legal document or the best way to care for a broken arm. It can be acquired when needed, as any other special skill is acquired. But every person called upon to examine many teachers or pupils knows that a standard far less exacting than the one herein rejected may easily be found as far above their actual attainments. Accuracy is not the rule, and rapidity is exceptional even in the simplest computations. In "partial payments" the principles involved are usually few and clear, and the uniformity trying experiences of a class are due to errors in the fundamental operations. This ought not so to be, especially when we consider for how many years arithmetic forms a staple topic in the course of study of every pupil. In our best schools results far above the average are secured, but on the whole the results are meager and out of all proportion to the time expended. To secure a well trained *memory*, which will furnish results instantaneously, patient, persistent, daily *drill* is indispensable.

If this has been neglected with any class, it is never too late to begin. A competitive exercise in addition, if not too long, is a useful and interesting introduction to any recitation in arithmetic, and as pupils attain proficiency their enjoyment in the exercise is heightened. Two suggestions seem useful here. The exercise should not be given with too large numbers or too long columns. Most business transactions may be expressed in numbers of few figures, and additions of short columns, say a half dozen numbers, are commonest. What is wanted is the speed of a race-horse for short spurts, rather than the sustained pace of a trained hunter over long distances. The habit of rapidity in dealing with short columns will easily extend itself, as occasion demands.

Secondly, the exercise must be vigorous. Tolerate no dawdling, with "eight and seven are fifteen, and six are twenty-one, and five are twenty-six," but *presto*, *staccato*, "eight, fifteen, twenty-one, —— six," and so on. Reduce the words used, whether spoken or only thought, to a minimum. The pupil's business is too *add*, to *think* the successive numbers, and all expression is but a clog to the thought, which soon outruns his power of speech so that he cannot frame the words for a result before he has got the next one, and so leaves the word half-uttered. Encourage the adding as one numbers of those pairs of numbers whose sum is *ten*, and afterwards other pairs.

Similar exercises may be given in the other fundamental operations, but addition and multiplication are most important. A very good exercise to be given at the beginning of every recitation is in this common form: Take six, multiply by seven, add three, divide by nine, etc.; or if given visible expression, $6 \times 7, + 3, \div 9$. These are always enjoyed, and an alert, wide-awake teacher can easily lead a class into wonderful command of all numbers less than 100, in their relations to all numbers under 10. Care should be taken to so add or subtract as to vary the combinations and possible factors at each step. This work should bear immediate and abundant fruit in increased facility in ordinary multiplying and dividing, and in all operations with fractions. Finally, all such efforts to secure rapidity, tend directly to increased accuracy. No one can carry such work creditably, while his wits are wool-gathering. Success is possible only with a high degree of concentration of mind, hence it is a direct mental tonic, and stimulant, as well as an invaluable aid to the memory.

Another solution: Let x equal one side of the cube. Then $x^2 + x^2$, or $2\,x^2$ = the square of the diagonal of one face.

$3\,x^2$ = square of diagonal of the cube, or square of diameter of sphere.

$3\,x^2 = 9$.

$x = \sqrt{3}$, hence $x^3 = 3\sqrt{3} = 5.196$ cubic feet. MARGARET SMITH.

SOLUTIONS AND PROBLEMS.

In the "Mathematical Section," p. 293, W. presents this problem: "What is the greatest cube that can be cut from a globe three feet in diameter? Give complete solution.

How much the term "complete solution" is intended to include is not clear to me, but the following is submitted:

Since the required cube is circumscribed by the given sphere, the diagonal of the one is equal to the diameter of the other; and since the edge of a cube is equal to its diagonal divided by $\sqrt{3}$, the required edge is $\sqrt{3}$, or 1.73 + ft. *Ans.*

SILAS Y. GILLAN.

PROBLEMS.

1. Required to find the center of a circle which passes through a given point and is tangent to two intersecting lines.

2. A gentleman wishes to set a rectangular orchard of 1,260 trees, so placed that the number of rows shall be to the number of trees in a row as 5 to 7. If the trees are to be set 8 yards apart, how much ground will the orchard occupy?

WHITEWATER, WIS. T. B. PRAY.

OUR DRAWER.

READING CIRCLE MATTERS.

WORK FOR THE FIRST MONTH.

ELEMENTARY. PAGE—four Chapters. HISTORY—what relates to Egypt. PHYSIOLOGY—first thirty-four pages.

ADVANCED I. QUICK—to page 22. FITCH—the first lecture. HISTORY—pages 315 to 354. POLITICS—to chapter IV.

ADVANCED II. SULLY—first four chapters. BROOKE—the first chapter. SWINTON—introduction and Shakespeare.

NOTES.

We are already advised of two new circles organized this year, and of the continued activity of several old ones. The time for full reports has not yet come. The movement will go on, and the persevering will reap its benefits.

If you have no circle in your vicinity with which you can identify yourself, undertake the work by yourself. Many are now doing so, and several solitary workers have already finished the elementary course.

QUESTION BOX.

Are paupers allowed to vote in Wisconsin? I have consulted authorities, including teachers, county superintendent, and institute conductors, but they differ, some telling me that they are not allowed to vote and others that they are. Will you please answer through the JOURNAL?

They are allowed to vote. Section 2, Chapter VII. of the Revised Statutes

reads as follows: "No person shall be deemed to have gained a residence in any town or ward in this State, so as to entitle him to vote at any election in such town or ward, by remaining in such town or ward as a pauper, supported by the town or county in which he shall be living at the time of such election; and no person shall be deemed to have lost his residence in any town or ward by remaining in any other town or ward as such pauper."

Is there any law relating to the time a country superintendent may give the teachers when writing for a certificate? Should the time be uniform, or may he allow the class at one place three days and the class at another place but two and one half days?

There is no legal provision on this point. The superintendent determines the time allowed for his examination. Of course it is better to allow the same time to all candidates, but there may be very strong reasons for such a variation as is indicated in the question.

OUR BOOK TABLE.

INFANT EDUCATION.

CONSCIOUS MOTHERHOOD; or the Earliest Unfolding of the Child in the Cradle, Nursery and Kindergarten, by Emma Marwedel. Supplemented by extracts from Prof. W. Preyer's, The Soul of the Child. Chicago: Interstate Publishing Co.; 563 pp.; by mail, $1.65.

Miss Marwedel has for some years occupied a very prominent place among the disciples of Frœbel in this country. Her purpose in the present work is especially to awaken the interest of mothers in the educational importance of the very first months of life to the unfolding of the human being. The facts which she accumulates as to the effects of prenatal conditions as well as those of the first months of conscious life are deeply significant. Take as an illustration of the first the following, quoted from the *Journal of the American Medical Association:* "Children of the siege is the name applied in France to those unfortunate children who were begotten during the siege of Paris, in 1871. Begotten amid the horrors of the Commune, those 'children of the siege' came into the world puny and misshapen. M. Le Grand Saulle, one of France's most celebrated alienists, has stated that out of ninety-two such children examined by him, sixty-two were crippled in mind and body; out of this number thirty-five showed malformations, and twenty-nine were imbecile." Of the second this single example must suffice. Speaking of the action of the German Reichstag to protect children from the injuries to sight resulting from injudicious school work, she says: "The great alarm concerning color-blindness vanished at once when its cause was found to be exclusively the early neglect of the color-sense. Dr. Magnus, Professor of Optical Science in the University of Breslau, makes the following official statement: 'Of 12,280 women carefully

examined, only thirty-one were found to be color-blind, while the male sex gave 3.25 per cent.' These statements coincide with similar official investigations among different nations. Prof. Virchow, of the Berlin University, stated lately before the Anthropological Society at Berlin, that he recommended at each school term fresh color exercises to his young students, when unable to detect red, blue, or brown in black, or yellow, white, or green in grey, while a trained eye detects these differences very easily. He recognized these exercises as of such vital importance as to lead him to present a bill before the German Reichstag, requesting earnest attention to the curriculum of instruction on this point. This importance seems greater when we see the different official statements of distinguished oculists as to the condition in German schools, especially the public schools, in the total insensibility to and ignorance of color tones, shades, and tints, for which no names had entered their minds." The dictum of the author is that "on the development of the senses depends the development of the mind;" and that this development of the senses begins at birth, and is the proper work of the earliest years of conscious life. Her book is, therefore, mainly occupied with discussing how this development, related as it is to the emotions, the intellect and the will,—the whole mind—may be best promoted. The methods of using the different devices of the kindergarten are described, and especially the author's circular system of drawing, sewing and paper-cutting, and the playing of botany in the nursery.

The second part of the book is of still greater interest. Prof. Preyer's work has not yet been translated into English, and this is the best presentation of it now accessible to English readers. It aims to be strictly inductive—consists indeed of a record of observations on the development of his own children, carried on systematically from the day of birth. These observations and the inferences founded on them are of the deepest significance as related to the problems of philosophy and education. Prof. Preyer says: "But a description of the gradual appearance of brain activity in a child, and the most careful record of the perfecting of his intellectual powers, would after all, be only a beginning. The spiritual development must, just as in the development of form, be dated far back of the origin of the individual existence." Heredity appears in the intellectual as in the physical endowment. "The soul or psyche of the new-born child does not therefore resemble a *tabula rasa*, on which the senses must write impressions, so that out of these impressions, in the thousand fold changes of our lives, our total mentality shall be produced; rather, the white page is already before birth written over with illegible, unintelligible, invisible characters, the vestiges of the inscriptions of unnumbered sense-impressions of long-past generations." He holds that his observations prove that ideas may be formed without the medium of language; that the primary concepts, time, place, etc., are inherited, "very much as are the beard and the teeth." "I affirm on the basis of my own observations, that as a child can average its sense-perceptions, both as to time and place, without the use of words or other symbols, even so it can form concepts and operate logically without the aid of lan-

guage. This discovery was made by Helmholtz. * * The talent for concepts and some of the first concepts are congenital; new concepts depend on new preceptions or experience, and begin before children learn to speak." Our space will not permit us to give further statements of the conclusions, nor any of the observations on which they are founded; but these will be quite enough to indicate to those interested in psychology the interest and importance of this work. The whole book is one of the most suggestive and valuable contributions to the literature of the kindergarten with which we are familiar.

—BUTLER'S PHYSICAL GEOGRAPHY, by Jacques W. Redway, (Philadelphia; E. H. Butler & Co.; 127 pp.,) is an exceedingly attractive work. The publishers have spared no pains in its mechanical execution and the result is a really beautiful book. It is equipped, too, with that abundance of illustrative material, diagrams, engravings, colored maps and charts, which add so much to the value of the best modern text-books. The matter of it is well selected and adapted to the wants of the pupils in the high schools. At the bottom of the pages is found, in the form of foot notes, an abundance of additional illustrative matter of much interest. The chapters on the physiography of rivers and those relating to the atmosphere seem to us especially deserving of mention for clearness in treatment and the interest of the matters presented. The abundance of details which press upon the author of such a work makes selection a matter of extreme difficulty; he is liable to make his book dry through lack of them, or burdensome through their accumulation; the relating of them to scientific theories is again a matter of difficulty, lest he introduce generalizations which the pupils will be able but imperfectly to grasp. In the matter of geological forces, especially the agency of ice, our author has been chary of theories, and in general has adapted his work in these particulars to the capacity of the young pupils who will be called upon to use it. The publishers of this volume offer an attractive list of school books which will be found on another page.

—THE PRACTICAL ELEMENTS OF RHETORIC, with illustrative examples, by John F. Genung, (Boston; Ginn & Co.; 488 pp.,) does much to justify the author's contention that there is a place for this branch in a well ordered course of study, and that it has value as an aid to effective composition. His book is not the dry compendium of stiffly stated rules and hackneyed illustrations which we have learned to expect when a book on rhetoric is announced. It is a fresh and original study of those principles of composition which it is worth while to know and consciously cultivate. These are treated rationally and in so well ordered a way that the unity of the book impresses itself upon the reader. Moreover, it is a rich mine of illustrative material, well chosen, and skillfully used. The extracts are long enough to serve the purpose for which they were selected, and apt enough to fix the attention and fasten in the memory clearly the principle to which they relate. The value of these is truly stated by Prof. Genung: "The best way to discern whether a rhetorical principle is true and

practical is to study its effect in the concrete. When the student sees how it looks in actual application, he cannot gainsay it, it is no more theory but fact. And all the more suggestive is the instance if it is not manufactured for the occasion but taken from those universally current works whose writers had neither the fear nor the worship of rhetoric before their eyes." He has made a vigorous and suggestive book,—a little too large, perhaps, but we are not sure where it ought to have been made smaller.

—CUTTER'S SERIES OF PHYSIOLOGIES, I. Beginner's Physiology and Hygiene; II. Intermediate Physiology and Hygiene, (Philadelphia; J. B. Lippincott & Co.; I. 144 pp., 30 cts.; II. 218 pp., 50 cts.). The first of these is a new work by Dr. John C. Cutter. It is simple in language, and abundantly illustrated, giving much attention to hygiene, and especially to the effects of stimulants and narcotics upon the human body. The second is a revision, by the above author, of Dr. Calvin Cutter's First Book on Anatomy and Physiology, which probably has been longer and more extensively used than any other text-book on this subject. The revision has changed it only as was necessary to bring it up to the present state of knowledge, and to add the sections on stimulants. Besides there have been added chapters on foods, beverages and emergencies, and directions for simple experiments and demonstrations.

—THE EARTH IN SPACE, a Manual of Astronomical Geography, by Edward P. Jackson; (Boston; D. C. Heath & Co.; 73 pp.,) is a simple and convenient little manual for grammar and high schools. It may be easily mastered in two or three weeks, and gives very effectively the knowledge essential for understanding the form and motions of the earth and their most important consequences.

—BIRDS AND BEES; Essays by John Burroughs, (Houghton, Mifflin & Co.; 15 cts.,) is number 28 of the admirable Riverside Literature Series. It contains Bird Enemies; The Tragedies of the Nests; An Idyl of the Honey Bee; and The Pastorial Bees—delightful essays all of them, and well adapted to awaken in young people a genuine and intelligent love for nature.

—FIFTY TWO-PART SONGS, by J. A. Butterfield, (Boston; F. H. Gilson; 48 pp., 20 cts.,) consists of original songs, with selections from European sources, graded according to difficulty and adapted for supplementary work in music reading. The book is bright and instructive, and will be appreciated by pupils of intermediate grades.

MAGAZINES AND PAMPHLETS.

—The *Century Magazine* will during the coming year publish a series of illustrated papers on Siberia and the Exile System, by George Kennan, author of Tent Life in Siberia. They are the result of patient investigations by Mr. Kennan, who, after four years in Russia, during which he familiarized himself with the language and institutions of the country, undertook a special expedition, during which he visited every important convict prison and mine in Siberia, and

obtained access to official documents and reports which will make his account of the highest value. This series will form one of the chief attractions of the magazine next year.

—*Education*, in a vigorous editorial, discusses the Campaign of the Clergy of the Roman Catholic Church against the American Public School. The need of a Western Fitting School, to take the place of the preparatory departments of so many colleges, is urged by Prof. F. A. Hall. Prof. Homer B. Sprague's paper before the National Association on The Place of Literature in the College Course and an account of Smith College, are also valuable articles.

—In the *Atlantic* we enjoy Susan Fennimore Cooper's A Second Glance Backward into the Italian life of her father. Mr. Percival Lowell makes his paper, The Soul of the Far East, a suggestive discussion of the significance of some of the peculiarities of the Chinese and Japanese languages. Theodore Child writes appreciatively of Millet, and N. W. House gives us a fresh bach of Anecdotes of Charles Read. The reviews of Schurtz's Life of Henry Clay and of Cabot's Emerson are also noteworthy.

—Three papers in the October *Popular Science Monthly* are esppecially noteworthy: David A. Wells's fourth article on Economic Disturbances since 1837, tracing the decline in prices of the staples to the progress of invention and discovery. Prof. Le Cont's answers to the question What is Evolution? and John Johnson's essay on The Savagery of Boyhood.

NEWS AND NOTES.

—An effort is making to raise an endowment of $10,000 for Albion academy, with fair prospects of success.

—The new Ladies' Hall to be erected at Ripon college is to cost $10,000.

—The Board of Examiners for State Teachers' Certificates for the present year has been constituted by the State Superintendent as follows: J. W. Stearns, J. Q. Emery, T. B. Pray. These names should be substituted for those published in the official announcement last month.

—Gov. Rusk has appointed Hon. Frank Challoner, of Oshhosh, a member of the board of regents of the university of Wisconsin in place of Gen. A. C. Parkinson, resigned. Mr. Challoner is a young man, born at Omro, in this State, in 1853, and is a graduate of the engineering department of the university.

—Candidates for State Certificates will take note of some changes made in the announcement for the present year, which was issued early in order that those preparing for the examination might guide themselves by it in their work. Recommendations regarding text-books are fuller than ever before in branches where such recommendations seems necessary in order to a correct understanding of the expectations of the Board. It will be noticed that the requirements in English Literature are extended, and that two works are specified with which those attending are expected to be critically familiar—Shakespeare's Julius Cæsar and Emerson's Representative Men.

The minimum rank required in the extra branches prescribed for the life certificate has also been raised.

—The people of Alma, have erected during the past year a fine brick public school building at a cost of nearly eighteen thousand dollars, and provided it with the best modern apparatus for heating and ventilating. They are also making arrangements to organize a high school under the State free high school law. C. D. Kipp is principal.

—The attendance at the fall institutes has been about as usual. The largest enrollment, so far as we are at present advised, was at Richland Center, where there were one hundred and ninety-six members. Although so large, this institute was not sectioned, and accordingly one conductor at a time was struggling with the whole body, "teaching" together in one huge class young misses belonging to the lower grades of the high schools and teachers of eight or ten years experience. Indeed, we have not heard of an institute in which sectioning was tried. Such is the power of routine!

—Hillside Home School is the name of the new educational institution established in Iowa county near Helena. It is under the charge of Miss Ellen C. L. Jones, formerly teacher of geography and history in the River Falls Normal school, and Jane L. Jones, formerly director of Kindergarten training in Eau Claire and then teacher of primary methods in the St. Paul Training school. Four or five other competent teachers are employed in the school which will prepare for college. A kindergarten training department is also provided.

—The attendance at the State University is unusually large this year. Nearly two hundred new students are already registered in the literary departments, while the class in pharmacy numbers about thirty and that in law nearly fifty. The agricultural students, who come later, will probably number twenty-five or thirty. Thus in all departments the year will give an influx of over three hundred new students and the total enrollment will probably exceed six hundred.

—Our item regarding the new school building at La Crosse was "slightly wrong," as Superintendent Hardy kindly suggests, and adds: "It is in the 10th, not the 16th ward; it cost about $17,000, not $10,000; it has eight rooms, not four."

—The Whitewater *Register* says: "There are at present 180 students in the Normal department and 80 in the preparatory and grammar grades."

—The public schools of La Crosse employ sixty-eight teachers this year.

—The following additional changes of school principals have come to our knowledge: S. A. Grubb takes charge of the high school at Clintonville; C. C. Merriman of that at Darlington; A. E. Schaub of that at Clinton Junction; George Collie of that at Delavan; J. A. Eakin of that at Brodhead; W. F. Owen goes to Phillips; Mr. Prideaux to Rhinelander; Frank Barber to Galesville.

—The reunion of Platteville Academy students at Platteville, Aug. 11, to meet their old teacher and friend, Prof. J. L. Pickard, proved as was anticipated, a most delightful occasion. Many of those present are now prominent in business and professional circles in our country. They voted to have a record of the proceedings published in pamphlet form, and the committee in charge propose to issue this with a full page phototype of Pres. Pickard; an engraving of the academy as it was in academy days; a biography of Pres. Pickard prepared by Col. J. G. McMynn; a

sketch of Miss Fanny S. Joslyn, by Pres. Pickard; and a full account of the reunion, speeches, toasts, etc., with a roster of the pupils of the old academy. J. H. Evans, of Platteville, has charge of compiling and arranging the material for publication.

—Supt. Anderson urges upon the Milwaukee school board the necessity of more attention to physical culture in the public schools. He calls attention to the need of care that the furniture of the schools be adapted to pupils in such ways that physical injury may not result from their attendance; that young pupils be not kept confined in school too many hours; that ventilation be more thoroughly studied and cared for, and that calisthenics be generally cultivated. The *Sentinel* thus summarizes the points of the report on this matter: "Aside from the recreation and exercises brought into school work and its invigorating effect on the body, calisthenic drill would train the body into correct form, promote grace of motion, and be corrective of the tendencies to malformation which come from close application to books. The range and variety of such exercises practicable in the ordinary school room are both simple and limited, and the exercises might be conducted with the teacher's knowledge. Tedious instruction at teachers' meeting is not necessary, but teachers should have a correct knowledge of the movements and should have some conception of what is to be obtained in style and correctness of movement. For the class room training there must be a leader and authority on the art. In the Sixteenth district school during the past year, the principal and teachers have conducted the matter of physical training independently of any outside help, except the recognition and approval of the superintendent and patrons. Wands and light clubs were used in the three upper grades, and the daily exercises were evidently enjoyed by the pupils and appeared to be very beneficial. They had the effect of modifying the style of dress worn by young misses of 16 years, and that with apparent gain to health and comliness."

—Of the necessity for physical training for school girls the superintendent says: "While the boys in the upper grades get some exercise from their sports, in the case of the school girls from the Fourth to the Eighth grades exercising by playing is out of fashion. A stately walk around the block at recess, two under one shawl, conning a book on physiology, history or grammar to prepare for the coming lesson, is the kind and amount of exercise they take. They walk and talk, talk and walk; perchance when evening comes they dance. Wearing a style of dress in which their robust brothers would shiver in their most active sports, these girls rarely move their upper extremities in outdoor exercise, and indoors engage in nothing more exhausting than the requirements of the toilet, the dinner table, or light domestic or fancy work. Muscular development above the waist is entirely wanting, and consequently nature has not the necessary basis for the full development of a healthful figure. The arms, encased in skin-fitting sleeves, the shoulders restricted by a snugly fitting bodice, ex-

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ercises adapted to expand the chest and develop the muscular tissue of the arms are out of the question. The deficiencies of physical culture are exaggerated by the undue susceptibility arising from the mental stimulus of school work. Girls study more ardently and continuously than boys, make larger draughts upon cerebral force and yet neglect that most important means of repairing and sustaining cerebral energy — vigorous use of the inspiratory apparatus, fresh air, and out-of-door exercise."

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NEW WORK IN SCIENCE TEACHING IN MILWAUKEE.

Two years ago an effort was made by the superintendent and a number of principals to introduce into the Milwaukee schools instruction in science by the aid of experiments. The work is now going on, and the system of teaching inaugurated two years since is still in its experimental stage. It is not easy, therefore, to speak with certainty as regards the merit of the work or its ultimate success; nothing more can be advanced than the assurance that so far the plans of the projectors have been intelligently and faithfully carried out. As to whether this system of teaching is to live, and the methods upon which it is based are to find a permanent following in the work of the school room, is to be proved in the future. Teachers' meetings in Milwaukee, as elsewhere, tend to theoretical and speculative pedagogics, and do not at all times afford the needed assistance in practical work. It is so easy to theorize, to talk about a thing, to tell what should be done and how to do it, to expatiate upon great aims and general requirements: but it is quite another thing to lay out a system of work which shall embody not only a clear, comprehensive view of the subject to be taught, but which shall also contain some new and valuable suggestions as to the methods by which such work shall be done.

The Milwaukee teachers found an instance of this in their first meetings, called to consider the subject of instruction in science by experiments. Of course there was some talk as to what we ought to do — perhaps a little vainglorious eloquence and rhetoric fired at the old targets, memory work, routine, machine drill, want of realism; but the teachers left the meetings quite divided in purpose and unsettled as to

the manner in which the reform was to be instituted. Then came an order from the School Board for the opening of an institute, which teachers were requested to attend. This order was backed by a small appropriation for the purchase of apparatus to be used in the teachers' meetings, by the director or expositor of the new method.

Of course the teachers had heard of efforts being made elsewhere to introduce teaching in the elements of science. Mr. Harris, Mr. McAlister and Mr. Stark had made the matter a frequent topic of discussion in teachers' meetings and annual reports. But the projectors of the plan under notice could not benefit by the *experience* of others, and though encouraging theory was plentiful, no information for practical guidance was at their service. Again, it was by no means easy to prepare the minds of the teachers themselves to assume a proper attitude toward the new scheme. The report of the superintendent to the School Board, in which — with the assistance of the principals — he proposed to introduce a change in this matter of instruction in physical geography, stated the object of the scheme as follows:

"I beg leave to call your attention to efforts now being made to introduce an improvement in one important branch of instruction in our district schools. It has long been the cherished hope of some of our best teachers, and has more than once been recommended in the president's addresses to this Board, that there be adopted more natural and rational methods of teaching those facts of the physical world commonly presented under the title of physical geography. The various and familiar phenomena witnessed about us in the effects of heat, light, mechanical forces, and electricity upon air, land and water; the existence and operation of numerous laws and forces constantly acting throughout the material world about us, are ordinarily treated by descriptive text-books, and the study of these subjects is pursued rather as a literary discipline than as an investigation into the real nature of the facts in question. These books are scientifically accurate as regards their arrangement and development of the subject matter. They are perfect and complete in technique, nomenclature and verbal definition, but, on the whole, they prove, in the hands of the average child, a "darkness of words," here and there feebly illuminated by pictorial views of things which should be presented to the child in fact and experiment. As books they are all that can be desired, but as a means by which to vitalize thought and evoke intellectual effort, they are still books, dealing in words and not things. The phenomena they are intended to explain are material and everywhere accessible, appealing to thought naturally, through observation and experience. Presented by means of oral and literary description alone, the knowledge these books are intended to impart bears the same relation to actual requirements through the study of things as the reading of history does to real experience — the

narative of the actual adventure. Besides, the knowledge acquired through the dogmatic forms of language alone, although it may appeal to the reason through the imagination and the ideal conceptions, still depends largely upon the verbal memory for its retention; whereas experience and sensible demonstration call into activity all the faculties and stimulate them to vigorous exercise and healthful growth.

"Wherever attempts have been made to set this department of teaching upon a true and normal basis, and make it a vital and organic part of the school system, the great obstacles have been found to lie in the want of skill and preparation on the part of the teacher. The best methods of instruction are the easiest, most pleasant and healthful for the child, but the most difficult for the teacher—requiring higher art and superior power and resource in instruction. But with the teachers the blame cannot rest unless they are supported and encouraged to achieve better things. School methods are more or less traditional and conservative, unusually seeking the easiest lines of operation, and following these lines by the force of established doctrine and practice. In such an improvement as we desire to accomplish, general directions are of little avail. The thing must be put into a realistic form to achieve this result. Time and study are needed on the part of the teachers, and encouragement and recognition from the Board.

"It is proposed to carry out the plan of oral and object instruction, as related to physical geography and as planned in the manual of our graded course, by inaugurating an institute to be conducted by Principals Lawrence, Lau, Walthers, Hooper and Prof. Peckham, of the high school, and to hold weekly meetings of the assistant teachers till the whole subject is traversed and the methods of instruction fully explained.

"Some simple apparatus and inexpensive materials for physical experiments will be needed to carry on this work, and to supply these I would respectfully ask the Board to make a moderate appropriation. The whole cost will probably not exceed $50. The most valuable contribution to the end sought will be the the teachers' time, which, of necessity, must come out of school hours, from their leisure and at their sacrifice. But I am assured that it will be freely and generously bestowed. The final results of the enterprise cannot fail to be of exceedingly great benefit to the pupils, and prove, on the whole, to be another advance step in improving the instruction of our public schools."

At the first teachers' meeting it was necessary for some of the principals to introduce the subject. Some simple apparatus was provided, and an introduction explaining as well as possible the purpose of the lesson was given by one of the principals; but the experiments, in the meantime, were forgotten, or omitted and the meeting resulted as usual —in talk. Another effort was made, and this time the leader of the institute had performed most of the experiments and was prepared to

illustrate the important principles and facts connected with the topic, "*composition of matter and some of its properties.*" Bravely did he approach his task. An hour passed and the teachers found themselves on new ground. The director failed, seemingly, in the midst of one of his experiments, an important one, and realizing for the first time, with the teachers, the gap between dogmatic demonstration and experimental proof, he proclaimed aloud: "*You see, I am but a learner at this business, and I presume I am getting more benefit out of this work than anybody else here.*" The point was well made. The ingenuous lecturer, by this simple stroke, placed the whole of us in a proper attitude toward the problem we were trying to solve. The schoolmams, who had seen superintendents rise and fall and principals come and go,—who had passed examinations in physics and were not prepared to "dabble in such silly trifling" as these experiments seemed to be, dropped their weapons, put on aprons, and good naturedly surrendered themselves to the project in hand. Dishes, tumblers, corks, water, glass tubes and rubber tubes, candles and alcohol lamps, and such articles of unaccountable names and uses (to the uninitiated) as find place upon the table of the teacher who attempts to illustrate some of the first work in physics, were soon the stock in trade. The Board, coming to the relief with another appropriation of $50 for each school, an aggregate of $800, gave an auspicions impetus to the enterprise.

We had not yet begun to work out the scheme, but felt that we had worked through the brush and underwood, and struck a good, broad trail, which we will follow in the next number of the JOURNAL if it is agreeable to our readers.

MILWAUKEE.

PHYSICAL APPARATUS FOR HIGH SCHOOLS.

The following list of apparatus, with the exception of a few pieces, was furnished by the National School Furnishing Company for the use of the Wisconsin Summer Schools for Teachers, and may be found helpful to school having limited funds to devote to the purchase of apparatus. In the list No. (1) stands against those pieces which are regarded as almost indispensible wherever Physics is taught by the experimental method. With these pieces, and some mechanical skill on the part of teacher and pupil, very much can be done experimentally to

illustrate the subject as presented by the average high school text-book. This list implies that a sensitive galvanometer can be made from No. 58 and that strips of zinc and copper will be used for a battery.

In the list No. (2) stands against those pieces which, *in connection with* (1), greatly extend the range of experimental work. No. (3) stands against such pieces as *added to* (*1*) *and* (*2*) will make a very fair working set of apparatus at a moderate cost. A Barometer and Student's Compound Microscope stand next in importance to the articles mentioned in the lists, and following these some good form of oil lantern.

1. Set Capillary Tubes. (3)
2. Pair Cohesion Plates. (3)
3. Adhesion Disk. (3)
4. Whorling Table. (2)
5. Set of Reaction Balls. (2)
6. Gyroscope. (2)
7. Atwood's Machine. (3)
8. Guinea and Feather Tube. (2)
9. Balance, sensitive to l. c. gm. Adjustable standard. (1)
10. Set of Metric Weights. (1)
11. Spring Balance, common. (1)
12. Illustrations of Elements of Machines, with set of weights. (2)
13. Equilibrium Tubes. (3)
14. Archimedes' Principle. (1)
15. Force Pump. (3)
16. Air Pump. (2)
17. Capped Receiver. (2)
18. Hand Glass. (2)
19. Pressure Hemispheres. (3)
20. Bell for Vacuum. (2)
21. Sheet Rubber, 1 sq. ft. (1)
22. Barometer Tube. (1)
23. 3 lbs. Mercury. (1)
24. Spirit Lamp. (1)
25. Ball and Ring for Expansion. (3)
26. Ball of Copper and of Tin, equal weights for Sp. Heat. (2)
27. Parabolic Reflectors. (3)
28. Chemical Thermometer, F. and C. Scales. 0° F. to 220° F. (1)

29. Spiral Brass Wire 12 ft. long for wave motion. (1)
30. Sonometer, two strings, scale and bridges. (2)
31. Diapason Mounted on box. (2)
32. Brass Plate, 6x6 inches, and clamp. (2)
33. Violin Bow. (2)
34. Concave and Convex Mirror in same frame. (2)
35. Glass Prism. (1)
36. Condensing Lens. (3)
37. Tourmaline Polariscope. (2)
38. Direct Vision Spectroscope. (3)
39. Radiometer. (2)
40. Plates for Newton's Rings, in brass frame. (3)
41. Bar Magnet, 8 in. (1)
42. Compound U-Magnet. (1)
43. Magnetic Needle. (2)
44. Grenet Plunge Battery, 2 cells, 1 qt. each. (2)
45. Galvanometer. (3)
46. Decomposition Cell. (2)
47. Induction Coil, ¼ in. spark. (3)
48. Resistance Coils. (2)
49. Friction Cylinders, glass and sealing wax. (1)
50. Gold-leaf Electroscope. (1)
51. Tœpler-Holtz Electrical Machine. Wheel 12 in. (2)
52. Leyden Jar, 2 qt. (2)
53. Discharge-rod. (2)
54. Geissler Tube. (3)
55. Magneto-electric Machine, with handles. (2)
56. Copper Wire, cotton covered, No. 20, ¼ lb. (2)
57. Copper Wire, cotton covered, No. 25, ¼ lb. (1)
58. Copper Wire, cotton covered, No. 36, ⅛ lb. (1)
59. Graduated Pipette, 20 cc., graduated into tenths. (1)
60. Graduated Glass Cylinder, 300 cc., graduated into 1. cc. (3)
61. 3 ft. ⅛ inch rubber chemical tubing. (1)
62. 3 ft. ¼ inch rubber chemical tubing. (2)
63. 1 lb. assorted glass tubing, ⅛ to ½ inch. (1)
64. ½ doz. Test Tubes, 7 in. by 1 in. (1)
65. ½ doz. Test Tubes, 5 in. by ¾ in. (1)
66. 1 2 oz. Glass Beaker. (1)

67. 1 4 oz. Glass Beaker. (1)
68. 1 one pint Glass Beaker. (2)
69. Small 2 in. glass funnel. (1)
70. 6 oz. Sulphuric Acid. (1)
71. 1 lb. Potassium Bichromate. (2)

F. H. King.

RIVER FALLS, WIS.

WOMAN'S WORK IN EDUCATION.

[Concluded from the October Number.]

Now, it is possible to draw a clear line between woman's power for good, and her power for harm, in the teacher's profession, and to see in what characteristics or conditions each takes its rise. But to see wherein and why she fails is clearly to understand the remedy, which being understood should be fearlessly and thoroughly applied; while to see wherein she succeeds is to pay just tribute to her worth, and mark the way to greater excellence. In our search for her shortcomings we must not forget that the fact that teaching is not yet a profession cannot be blamed to women. In the earlier ages of the world the teaching office was a part of the priestly office; and since teaching has, by the division of labor, become a lay occupation, men, instead of setting themselves apart to pursue it as a career, have used it, in the main, merely as a stepping stone to something else. They have not yet as members of a teaching profession raised any barriers, such as exist in law and medicine, against the entrance into the midst of their occupation of any who choose to come; they have not claimed the right, as a body, to pass judgment on the qualifications of those asking admission to their ranks; nor have they taken the privilege of putting their own price on their work. And, furthermore, the scientific spirit which makes professional labor, is only just dawning among male teachers themselves. For all these things, women are not responsible. But events now move toward the formation of a teaching profession, and to this end the work should be guarded from the invasion of an unprofessional spirit whether of men or women. The census of 1880 showed that over two thirds of the teachers in our country were women, and the proportion has not since materially changed. Taking the ten cities of Baltimore, Boston, Brooklyn, Chicago, New Orleans, New York, Philadelphia, San Francisco, and St.

Louis together, they employ 11,540 women in their schools to 1,179 men, or only one man to ten women. Why is teaching becoming so exclusively a woman's business, particularly in our great cities? I dare not think it is primarily or chiefly because of any high or peculiar fitness for the work, because women in their scramble for the means of livelihood do not always take account of what they are best fitted for; and because the ordinary public officer, who takes what he calls a practical view of the question and decides it in favor of economy, does not always employ them on the ground of fitness. Their numbers seem to be due to two things: first, they must have bread, and they know few ways in which to earn it; and, second, they work for less money than men do. But for women to flock to teaching in such overwhelming numbers, is neither the best thing for the profession nor for women themselves, and needs to be corrected. This can be done by the movement of women into other departments of labor, and it is true that many others are now open to them; but they are not as yet habituated to work therein, nor the eyes of the world to see them do it; which makes their presence there appear to be ill-bestowed, and drives them in shoals into the schoolroom. Now, to prevent this, those who are interested in the establishment and maintenance of a teaching profession, should use their influence to open wide all ways for the industrial exertions of women, and to create a public opinion that will encourage women to choose any work their taste or judgment may dictate, and will sustain them in its performance.

But when women in schools are reduced to their rightful numbers there are still dangers that threaten. The fact that through all the period of their minority women have looked outward for direction; the fact that they have trained themselves for ages to take what was given them and be content; the fact that though men are often very generous, very indulgent, very chivalrous, toward women, they are not always perfectly just to them; the fact that marriage among women shortens their term of service, and tends to their pursuit of teaching as a makeshift, without settled purpose either to know the business, or to win an independence by knowing it,—these facts now operate against women as teachers in the directions of adequate preparation, of competent salary, and of responsibility and continuance in office; and will eventually operate against the profession itself by preventing its attainment to rightful dignity and importance in the eyes of the world, and fixing

upon it low rates of money compensation; which is, whatever may be said, the practical and just guage of the world's appreciation. We must, in justice, again remind ourselves that women are not responsible for what the business was when they went into it; but neither should they desire to make it anything less than the sum of its noblest possibilities. Let us, then, with all earnestness consider whether or not these dangers can be averted; for if they cannot, one of two things seems clear, that women must leave the profession for its future good or remain in it to its future harm. Of course, this applies only to women as a class. It is true that in many single instances they furnish noble examples worthy of imitation by all teachers. It is also true that there are men in the profession who belittle it in similar ways; but to insist that "you're another," is never to point the pay to reform.

The first and most effectual way out of all these difficulties whether caused by men or women would seem to be the establishment of teaching on a full professional basis. It would then be possible to fix whatever tests in the way of general scholarship, special training, or technical skill, seemed necessary; and, when fixed, to sustain them without fear or favor, against all who sought admission. If such tests were thus impartially sustained, however, justice would require an equally impartially admission to all the facilities for preparation; which would throw open to women the doors of colleges and universities now closed, and give them free access to every chair of pedagogy in the country; a result which in the nature of the case must, it would seen, sooner or later be realized, and toward which the progress of events is now evidently tending.

In the matter of salary men and women alike have this interest: to receive such a price for their services as will gain for them the immediate comforts of life, the means of continuous mental growth, and a comfortable home in old age. These certainly are not unreasonable demands in return for a life spent in faithful and efficient public service. The salaries now paid to the majority of men in the profession, are barely equal to this; those paid to the majority of women are entirely unequal. To the old and thread-bare argument that urges higher wages for men on the ground that they must provide for others, the answer, so must women, is sufficient; but the argument is even shorter-sighted than it seems at first glance, and is blind to the best interests of men themselves. And if women should demand at once to be paid the same

wages that men receive for the same grade and quality of teaching, the demand should be upheld by men for their own sakes. An incident to the point presents itself in the recent action of the Type-Setters' Union of Buffalo, N. Y. Within a few days they have decided that the women who set type in Buffalo, shall hereafter receive the same salary as the men. By this they do not lock the women out; they only say to their employers: pay us all alike; we cannot consent to be underbid. There seems to be no unfairness in this to any one concerned. Now, if the employer is perfectly impartial, it only devolves upon the women of Buffalo who wish to set type, to make themselves as valuable as men, in order to find employment at the best wages. If they cannot do this, perhaps the sooner it is found out, the better. But I believe the fact is settled beyond dispute, by actual trial, that they can do it. Of course the motive that prompted these type-setters, was a selfish one, but will not the results of the step they took make it worthy of imitation? It is true that male teachers cannot fix the salaries of women in the profession because they do not yet, as a body, fix their own. If, however, they would use their influence to have women paid equal salaries for equal work, in larger measure than they now do, they would in time not only advance the wages of women, but their own also; since the lowness of women's salaries reacts upon the salaries of men. And further, it is firmly believed by many thinking people, upon what they consider good and sufficient grounds, that if perfect legal equality, especially the right of suffrage, were conferred upon women, it would help them to secure equality of wages. It is certainly incontestably true that the legal and social standing of those who engage in a given work influences the world's opinion of the value of that work; so that, if women be kept inferior to men in social dignity and legal power, the fact will operate to degrade their labor in public estimation, and to lower its market price. Here, again, it is the destiny of men and women who work together, to rise or fall together; and unless the matter has been overstated, the duty of male teachers to themselves and their profession is again clear. They should used their influence to place women on a plane of perfect legal and social equality with men. Now, whatever prejudice, either for or against this particular claim, we may, any of us have, we cannot *know* whether the result of such equality would be good or bad until we try it. Dogmatizing about it one way or the other, but serves to breed bad humors. Let the experiment be fairly tried, and

the results be fairly weighed; and until this has been done, let us hold judgment in abeyance. These are some of the ways in which male teachers may use their powers to establish their profession upon a firmer footing, and to secure abler co operation on the part of woman who receive admission to it. Responsibility does not, however, rest with them alone: it rests, in part, with communities and the regularly constituted school officers who represent them. Different motives among these operate in different directions. In some localities, cities particularly, the number of male teachers is restricted to an unwarranted extent, in behalf of economy, women being employed to the exclusion of men because they can be secured at lower salaries; in others, a prejudice against women shuts them out from the best positions even though they may have every needed qualification for the place; and in places where politics reigns supreme, a man's influence as a voter being desired, he is given the preference in place of the woman who cannot vote. Now, if the public and their constituted authorities are to accord to women their just place and influence in the teaching profession, they should give women an equal chance with men when they possess equal qualifications, they should invest women with equal political power, and social dignity, and when it is conceded that they possess capacity equal to their competitors of the opposite sex, they should not be employed because they will undertake to serve for less compensation. This is all wrong, and serves nobody's real interests. The last responsibility for the smallness of women's salaries, does and must rest with themselves. If all other hindrances were removed, and they still stood in their own way, who could prevent it?

One of the directions in which women as teachers need to grow is that of responsibility in office. They depend too much upon outward direction and too little upon their own judgment. They practice teaching too much as a mere art, and study it too little as a science. The disposition to expect direction is fostered and increased in our city schools. Young women, for the sake of home or social life, seek positions in them. These young women are frequently inexperienced in their business, and need and receive help. Life is pleasant; they fall into a groove, and continue to work under direction. This relieves them, in large part, of the responsibility of studying out school problems for themselves; and diminishes their interest in their work and their chances for promotion. More responsible positions in smaller towns would train their powers to

better advantage. There without help and without hindrance they could work out by the light of experience, directed and illuminated by principles, the great questions of their profession. But neither should independent work be carried to an extreme; hence teachers, so situated, should compare their conclusions with the conclusion of others thinking along the same lines. Women should take especial pains to keep themselves in the full current of professional thought, and should cultivate a professional spirit. They should not retire from business at each close of school, but she would keep their minds and hearts open to all influences that can make them more efficient teachers; among which are the associated efforts undertaken within the profession itself, and the scientific literature of education, now multiplying so rapidly. Like all people who practice that which is part art, part science, we live in a world of possible, perhaps of reasonable excuses for failures, and the intellectual interest with which we regard our profession will, to a great extent, make or mar the work we do in it. In short, if women want to raise themselves to greater usefulness and influence as teachers, they must work, not play, at education. Mrs. Browning puts into the mouth of Aurora Leigh these noble words, that women in our profession should learn and live by: "I would not condescend to such a use of holy art and golden life. Better, far, pursue a frivolous trade by serious means than a sublime art frivolously."

As to the matter of length of service, whil professions have justly claimed the right to fix the qualifications and examine into the purposes of those who asked for entrance, while those of law and medicine, at least, have set their price upon their work, no profession has ever claimed the right to prevent a member from leaving it upon sufficient cause. Women always have married and always will marry, and the cares of home and children will, in many instances, absorb their time and strength to the exclusion of a profession or trade. *The Story of Avis* was written from this text; but in the list of certainties which the world's experience has narrowed down to death and taxes, marriage is not included, neither does it, when it comes, always exempt a woman from the necessity of earning her living. Let girls, therefore, prepare for certainties rather than uncertainties, and let us all be thoroughly convinced, once for all, that in so doing they do right, and that whatever knowledge of human nature, and the laws of mental growth, whatever philosophy of life they may have gained for or by teaching cannot be otherwise than

highly useful when brought to bear upon the home training of the young. And furthermore, if married women are to pay attention to anything whatever beyond their immediate home, what interest could be found more fit for their attention, more deserving or needful of their help, than the schools in which their children are educated? This idea is just beginning to dawn upon the public mind, and women are now being appointed and elected to school offices.

The health of women is a matter much discussed, and often urged against them in connection with their entrance into high institutions of learning and more steady and exacting employments. This is another question which can only be settled by fair and full experiment, of which we have already, perhaps, had sufficient to predict that this objection is without foundation, and that steady employment of mind and body on matters of interest outside of self is conducive to the health of women as of men.

And now if it to be freely conceded that women in certain ways threaten the profession with harm, it should with equal certainty be claimed that they bring their positive contributions for good. The advent of women into the schools has introduced their gentler manners and gentler measures of discipline. It has created a demand for a higher moral tone in all teachers. It has increased chivalry and purity among boys; it has inspired courage and purpose in girls, and has brought to bear upon the formal work of education, the inspired methods of the mother. Pestalozzi and Frœbel learned their art from the instructive methods of children's mothers, the born educators of the race. When possessed of good minds and hearts, and animated by an earnest purpose, the natural aptitude of young women for the care and training of children cannot be surpassed. Mr. Buckle, in his essay on "The Influence of Women on the Progress of Knowledge," says: "Women have rendered incalculable service to this progress by their turn of thought, their habits of mind, their conversation, their influence, insensibly extending over the whole surface of society, and frequently penetrating its intimate structure. They have more than all other things put together, tended to raise us into an ideal world, and develop into us those germs of imagination which even the most sluggish and apathetic understandings in some degree possess. Therefore it is that those who are most anxious that the boundaries of knowledge should be enlarged, ought to be most eager that the influence of women should be increased,

in order that every resource of the human mind may be at once and quickly brought into play.

It is undoubtedly true that women possess an influence, put forth both consciously and unconsciously, which constitutes an educational force that men alone cannot exert and that society can ill afford to lose.

Women are needed to idealize the work of teaching; when this is done, the tread-mill like monotony of daily detail so wearing to the spirits will, in a great measure, be done away; the vapors of dullness and indifference will be dispersed, and we shall come to breathe in common school-rooms, "a diviner air."

Women have it in their power to become an inspiration to human endeavor. To the clarified vision of the woman of the future, this truth will appear in clear and ever clearer lines, and when she comes fully to see and to act upon it, humanity will rise to the pursuit of larger, worthier ends. That the belief in woman's moral power is deeply seated in the thinking mind, both literature and art give evidence. Emerson says: "Civilization is the power of good women." Gœthe sums up his great drama of *Faust*, in these words: "The eternal feminine draweth us on and up;" and Munkacsy, in his noble picture of "Christ before Pilate," symbolizes rising Christianity in a young mother.

From this survey of woman's work in education, may we not safely draw these conclusions:

That women have entered the profession in compliance with the necessity for self-support.

That their entrance there is potent both for good and ill.

That they threaten harm to the profession in no way whatever, that clear views and determined and judicious action may not completely avert.

That they are not as yet in possession of their full rights in the profession, either as learners or as workers, and that in the interests of all concerned, men, perhaps even more than women, every right and every privilege should be bestowed upon them with perfect impartiality at the earliest possible day.

That all rights possess corresponding duties, the fullest freedom always imposing the highest restraint, and that women cannot inherit an equal opportunity with men without inheriting an equal responsibility.

That women bring into the teaching profession positive influence for good that cannot now be estimated, and should not be ignored nor lost;

and that the exigencies of our advancing civilization demand an ever increasing influence of womanly qualities in human life.

Finally, let women be persuaded to be glad and proud to be women; and to believe profoundly that whatever their true sphere may prove to be other than has been thought, it never can or should be that of man; that two, "full-summed in all their powers," are yet "distinct in individualities."

Let women be not contemptuous of the day of small things, nor yet contented with it, but with full courage and high resolve, move calmly and steadily forward to an inheritance of perfect freedom, well-used, and complete responsibility, well-met.

Rose C. Swart.

Oshkosh, Wis.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

Study of the Substances Which Must Be Taken Into the Body in Order to Maintain Life.—Objects of the Lesson: To teach that: 1. The human body loses daily, on the average, 7.6 lbs. of oxygen, .77 lb. of hydrogen, .6 lb. of carbon, .041 lb. of nitrogen and .09 lb. of other elements or over 9 lbs. in all. 2. These elements, in about the proportion named, must be supplied to the body daily. 3. These elements are derived from seven classes of food principles: oxygen, water, proteids, albuminoids, fats and oils—hydrocarbons,—starches, sugars, etc.—carbohydrates—and salts. 4. Except free oxygen, several or all of the food principles may be contained in one of common food-stuffs, such as beef steak. 5. The food principles are introduced into the body through the lungs and alimentary canal.

Having become familiar with the several demands for food in our bodies we are prepared to learn how these demands must be met. First in regard to the substances from which the supplies are drawn and which constitute our food. From the air, we derive daily through the lungs 1.831 lbs. of oxygen, and to get this we breathe daily about 346 cubic feet of air. We do not ordinarily think of the oxygen we breathe as food, nor of the oxygen supplied to the engine or the stove as fuel. The oxygen, however, is truly food in one case and fuel in the other. With every pound of wood which is burned more than a pound of pure oxy-

gen is required, and, of course, is supplied through the draught in the stove or engine; and as no heat can be produced without the collision of the oxygen atoms with the atoms of the wood, it is evident that both play an equal part in pooducing the heat. So, too, with the oxygen we breathe, constituting, as it does, one fifth of the daily supply to our bodies, it is one of the food substances absolutely essential to the production of motion and of heat. Through the lungs, then, the body obtains one fifth of its daily supplies in the form of oxygen. The remaining four pounds of oxygen and the other constituents included in the list are obtained in health almost wholly through the alimentary canal.

A large part of the 6.5 lbs. of water given off from our bodies daily is consumed with the other substances we eat, as a constituent part of them. Potatoes, for example, contain about 84 lbs. of water in 100. Some water, however, is produced in our bodies by the union of oxygen with hydrogen, just as we have found it produced by the burning of oil from the lamp. We need, then, less than 6 lbs. of water daily. The uses of water in our bodies are mainly three: 1. It dissolves the other food principles in the alimentary canal, and carries them into the bloodvessels, and from thence to the tissues where they are used. 2. It dissolves some of the waste materials in the tissues and conveys them out of the body. 3. It is poured upon the surface of the body to evaporate and keep its temperature from becoming too high.

The proteid substances, like the greater portion of egg, of cheese, of the lean of meat and portions of most grains, together with the albuminoids, like the gelatine produced by the cooking of white, fibrous tissues, perform three offices in our bodies: 1. Their great use is to build and repair tissues during life, and no person can live on a diet which does not contain these substances; for the body is unable to produce them from the other food principles. 2. In their final removal from the body, they are burned to produce heat, and perhaps, to some extent, muscular motion. 3. They are decomposed to some extent in the body and one portion of them stored up as fat to be used in times when the natural fool supply is too limited. It should be kept in mind, however, that the foods of the gelatine class have far less value than the proteids, and can never be a complete substitute for them.

The fats and oils — hydrocarbons — and the starches, surgars, etc.— carbohydrates — are pre-eminently the motion and heat producing ali-

mentary food principles, and, so far as can be said with assurance at present, this appears to be their main, if not their only, function.

The various salts, such as the sulphates and phosphates of potassium, calcium and magnesium, are taken in very small quantities in the various articles of diet, and are not taken separately, except common salt. Some of the sulphates and phosphates are also produced in the body from the sulphur and phosphorus contained in the proteid substances. These salts have two functions which are known: 1. They serve as a stiffening material for such tissues as bones and teeth, and must be present, therefore, in due proportion in order that good bones and teeth may be formed. 2. Some of the blood constituents are not soluble in pure water, but with a small per cent. of salts present they are soluble, and thus move readily to and from the various regions of the body.

Several, or even all of the food principles, except the free oxygen, may be found in a single one of the foodstuffs ordinarily eaten, and the great problem in feeding ourselves and our domestic animals is, how to combine the foodstuffs so as to have the alimentary principles in just the right proportions. If this is not secured we either partially starve while eating large amounts, or we overwork certain organs to remove the surplus food introduced into the body.

There is another class of substances, commonly taken with food, such as pepper, mustard, cinnamon, etc., known as condiments, but which are not real foods but stimulants of the useful class. They serve to stimulate the nerve center so as to cause the digestive fluids to be poured upon the food in sufficient amounts.

THE DIGESTIVE AND RESPIRATORY SYSTEMS.

We have now to become acquainted with the organs which import into our bodies the supplies required for the various life-purposes, and see how they accomplish their results. These importing organs, as we have seen, are the alimentary canal and the lungs.

STUDY OF THE MOUTH DURING THE PROCESS OF EATING.—OBJECTS OF THE LESSON: To teach that: 1. When food is introduced into the mouth saliva is poured out upon it from three sets of glands. 2. The food is pulverized and mixed with the saliva preparatory to swallowing. 3. The cheeks and the tongue act together to hold the food between the teeth during mastication. 4. During mastication the soft

palate closes the passage to the pharynx and retains the food in the mouth, leaving us free to breath. 5. The beginning of swallowing consists in producing a vacuum with the tongue causing the air to crowd the cheeks in between the teeth and force the food upon the tongue. 6. The food is then carried back by the tongue into the pharynx, the soft palate turned up to cover the nostrils, and the œsophagus drawn upward upon the mouthful. 7. The pharynx is a conical chamber having seven openings.

Familiar as the processes of mastication and swallowing are, there are few of us who know definitely in what they consist. To discover the steps of the process requires close observation, and the examination serves to fix the attention of the student very definitely upon both the anatomical and physiological sides of the preliminary stages of digestion; these, also, are two of the many processes we have to learn to go through without knowing just what we do. For these reasons it seems emenently proper to make a definite study, in the concrete, of mastication and swallowing.

Let each member of the class, after being provided with half an apple, bite off a small piece, leaving it perfectly still upon the tongue, and making no motions with the mouth, but fixing the attention upon the saliva, which will immediately begin to flow. Try to discover the places in the mouth where it enters. It will be observed by most of the pupils that the saliva collects at the two corners of the mouth and beneath the tongue. That which collects at the corners of the mouth, comes from the two parotid glands, situated on the cheeks, just in front of and below the ears, and is poured in on the outside of the second upper molar tooth, where it falls directly upon the food. That which collects beneath the tongue comes from two sets of glands, the submaxillary, situated just beneath the tongue, in front. If the tip of the tongue be turned down and slid forward on the floor of the mouth, two small lumps will be felt. It is through openings in these that all of the saliva from the submaxillary glands, and a part of that from the sublingual glands, enters the mouth. But what causes the saliva to begin flowing? The piece of apple, by the juice it leaves upon the tongue, and by its contact, excites nerves which are indirectly connected with the nerve centers, whose function is to control the action of the salivary glands, and in this way they are set in action. It is worth while to fix the attention here, because in ways similar to this the various digestive glands are

brought into action at the proper times. Next, bite off a piece of apple, and note that it is the tongue which places it between the grinding teeth. On chewing the apple it will be seen that the tongue is tipped a little sideways, and held against the opening between the upper and lower teeth, so that the cheek and tongue together keep the apple from falling out on either side. It will also be noticed that the cheek and tongue come together behind the double teeth, thus preventing the food from working backward. When the food is sufficiently masticated, how is it removed from between the teeth? With a piece of apple between the teeth and the lips slightly open it will be found very difficult to get it out. The lips must first be shut air tight, then, by drawing the tongue down, a partial vacuum is produced and the pressure of the air on the cheeks outside crowds them between the teeth, forcing the food upon the tongue. By increasing the depression of the tongue we can cause the cheeks to be crowded in so as to form great folds between the teeth. During the processes of mastication and getting ready to swallow the soft palate is drawn down like a curtain between the mouth and pharynx, making a water-tight cavity, which allows us to breathe. With the food placed upon the tongue ready for swallowing, the next step is for the tongue to move a little backward, and to press upward against the roof of the mouth, thus carrying the food back into the pharynx, while at the same time the soft palate turns up, covering the nostrils. If, while in the act of swallowing, we grasp the upper end of the windpipe with the thumb and finger, we shall find that just as the food comes into the pharynx its walls contract powerfully, and draw the windpipe and œsophagus upward, thus forcing the food into the swallow, whence it is quickly carried into the stomach.

Since we can take air in at the mouth and force it out at the nose, both the nostrils and mouth lead into the pharynx, which as we have seen may be shut off from the mouth by the soft palate. Both the windpipe and œsophagus must lead from the pharynx; hence there are at least five openings into that chamber. If the mouth be now closed and nostrils shut, by pinching with the thumb and finger, while we try to force air out of the lungs a sense of pressure will be felt in each ear and these two openings are likewise in the pharynx, so that there are seven in all.

STUDY OF WHAT WE DO IN BREATHING.—OBJECTS OF THE LESSON: To teach that: 1. Air is alternately taken into the lungs and expelled from them at regular intervals. 2. To get air into the lungs the

ribs either move upward and outward, or the walls of the abdomen move outward, or else both of these movements occur together.

Let each member of the class count the number of times air is taken into the lungs in one minute, as determined with a watch by the teacher. Let each pupil record his number, keeping it to himself, and repeat the experiment at least four times; then determine the average number per minute for the whole class. Determine the average number for the girls and for the boys. These averages are not likely to be exact, as we rarely breath naturally when we are thinking about it. Arrange with two or three of the pupils, who may have watches, to count the number of respirations of as many other members of the class during five minutes at the next recitation but unknown to those members, and compare this record with their own determinations. This second experiment, and the proper consideration of its results, has its greatest value in its tending to fix the habit of guarding against errors of judgment resulting from wrong methods of experimentation.

Now allow the pupils to inspire, filling the lungs as full of air as possible, at the same time noting carefully just what they do. It will be observed that two movements occur; the ribs move outward and upward, the walls of the abdomen move outward, and at the same time there is a sense of muscular exertion in the region of the stomach. Next allow the pupils to expire, forcing the air out as completely as possible. It will be observed in this act that the ribs fall downward and inward, at the same time the walls of the abdomen are compressed, and a sense of muscular effort is felt in that region. At this stage, if the pupils have done serious work, they are prepared to examine with profit the respiratory and digestive organs of some small animal, as a rat, gopher or kitten.

STUDY OF THE DIGESTIVE AND RESPIRATORY ORGANS OF A KITTEN.—OBJECTS OF THE LESSON: To teach that: 1. The digestive organs consist of a long, much folded tube—alimentary canal—extending through the body and having a set of glands opening into it. 2. The alimentary canal is marked off into regions—mouth, pharynx, œsophagus, stomach, small and large intestines—each of which has a special work to do. 3. The alimentary canal is swung from the backbone by means of a strong membrane—peritoneum—which permits easy movements of its parts and secretes a fluid preventing irritation by friction. 4. In the peritoneum lie the vessels which bring blood to the canal and carry the digested food away to the body. 5. The alimentary

canal has layers of muscles in its walls, by which the food is moved through it, and is lined with a mucous membrane. 6. The salivary glands, liver and pancreas pour their digestive fluids into the canal by narrow ducts. 7. The respiratory organs consist of an air-tight chest —thorax—provided with muscles for varying its size, and a wide tube —trachea—leading into the chest, where it divides into innumerable branches, ending in very thin-walled air-cells which are bound together by elastic tissue and called the lungs. 8. The lungs are hung by the trachea in the thorax and free to move. 9. The lungs are surrounded by a membrane—pleura—which also lines the walls of the chest and secretes a fluid which prevents irritation by friction. 10. Bloodvessels follow the branchings of the trachea to the air-cells, which they cover with a net-work of capillaries, through which oxygen enters the blood and carbon dioxide and water leave it.

The small animal may be readily killed by placing it in a sack and the sack in some box, no larger than necessary to receive it, and which can be closed rather tightly. With the sack, containing the animal, in the box, drop a small sponge or mass of cotton, saturated with about a teaspoonful of chloroform, into the sack, closing its mouth quickly by twisting and then shutting down the box lid.

When then animal is dead, with a *sharp* knife make a clean cut from the chin along the whole ventral surface, taking care not to cut anything but the skin, and especially not the large bloodvessels in the region of the neck. Now carefully turn the skin back about two inches from the middle line on each side, by pulling and cutting the connective tissue here and there, uncovering the cheeks to the eye and base of the ear.

Just below and in front of the ears will be seen, on each side, the large parotid gland, with its thread-like duct running forward across the cheek-muscle. Behind the cheek-muscle, and below the parotid glands, will be seen the two smaller, but still large, submaxillary glands; and between these, straight behind the chin, the sublingual glands. Notice the large bloodvessels in connection with the several glands. Open the mouth and beneath the tongue, just in front of the skin which ties it down, see the two papillæ through which the saliva from the submaxillary glands enters the mouth.

Next, carefully cut along each side of the windpipe and œsophagus, avoiding cutting either them or the large bloodvessels. Raise them together out of place and cut both off above the larynx, and loosen them

from the neck to where they enter the chest. Notice now that the œsophagus opens behind the trachea and a little below its mouth. Bend the epiglotis down so as to close the windpipe as in the case of swallowing. Next, with a pair of scissors, cut off both tubes about an inch below the larynx. Notice that the œsophagus shows plainly two layers, an outer one of muscles, and an inner, and much lighter, which is the mucous membrane. Both of these layers are found in all parts of the alimentary canal. Notice that the trachea is made of a series of rings, open in the back, and also lined with a mucous membrane. Insert a small tube, having a rubber tube attached to it, into the end of the trachea which bears the larynx, and, while pressing from side to side with thumb and finger upon the larynx, force a strong current of air through it. The vocal cords will be clearly seen to vibrate, and a sound will be produced. Now insert the tube in the end of the trachea, still in the body, and force air into the lungs, noticing that the ribs are lifted, and that the viscera of the abdomen are crowded downward and the abdomen enlarged. The reverse of this experiment takes place in actual breathing, the ribs are raised and the abdominal viscera are forced down, and this, as we shall see, allows the air to enter. Next carefully cut open the abdominal cavity, *beginning* at the *lower* part, taking care *not* to open the chest. You are now ready to shew how air is taken into the lungs. Insert a tube into the trachea, and into the outer end of the rubber tube insert another *glass* tube, and let the end dip into a tumbler of water. Now place the fingers above the liver and move it backward, thus pulling the diaphragm after it. The water will be seen to rise in the tube, showing that the air is trying to enter the lungs. Next take a pinch in the muscle on the lower part of the ribs on each side, and draw them outward and upward. Water will be seen to rise in the glass tube as before. Repeat each of these experiments several times, and perform both at the same time.

Now, with a pair of scissors, cut off the ribs on *each side* of the *breast-bone*, thus opening the chest. Notice the following points: 1. How the diaphragm completely divides the body cavity into two chambers, one containing the heart and lungs, and the other the stomach, liver, etc. 2. That the diaphragm is a muscular membrane. 3. That a delicate, transparent membrane — pleura — divides the thorax into two chambers, one lung lying in the right and the other in the left. 4. That large bloodvessels connect the heart on each side with the correspond-

ing lung. 5. The heart, with its pericardium is also beautifully shown.

Now, while the walls of the chest are held apart, force air into the lungs to show how they fill the thorax when distended with air. While held distended look closely at the thin margins of the lobes to see the cellular structure. Use a hand lens also. Notice that when the pressure is withdrawn, the lungs collapse, proving the elastic nature of the connective tissue. Next remove the heart and lungs from the chest, taking care not to cut the lungs. Slip the trachea upon a glass tube inserted in a cork, which tightly fits a wide-mouthed bottle. After securely tying the trachea to the tube, lower the lungs into the bottle, pressing the cork home. By means of a second tube, extending through the cork, withdraw the air from the bottle with the mouth, and the lungs will be seen to expand fully, the pressure of the air on the outside doing the work. A pint Mason fruit can, in the cover of which has been soldered two small tubes, makes a very serviceable piece of apparatus for the purpose.

Next notice the form and relative position of the liver, also of the other viscera of the abdomen, before they are turned out of place. Raise a fold of the small intestines and notice the nearly transparent peritoneum bearing the bloodvessels, and also, how the bloodvessels break up on reaching the canal, and spread out upon its walls. Look closely and observe the very fine, almost colorless, vein-like lines which ramify in the peritoneum. These are the *lacteals*, which, in connection with the bloodvessels, carry the digested food into the circulation. Turn the lobes of the liver up toward the diaphragm, and notice the form and position of the stomach. The œsophagus will be seen to come through the diaphragm and join the stomach near the left end, and the small intestines to leave it from the right. On the under side of the liver will be seen the gall-bladder, and, leading from it to the small intestines, near the stomach, the bile-duct. There will also be seen, in this same region, the long, flat, pinkish pancreas, extending along the inner curve of the intestines and around behind the stomach. Notice also the large portal vein, which enters the under side of the liver carrying all the blood from the alimentary canal, below the diaphragm; and tie its end. Raise the stomach from its place and, by cutting the peritoneum which holds the canal in place, gradually remove the whole intestine, straightening it out and comparing its length with that of the body. Side by side with the large vein and artery lying against the backbone, may be seen

a fatty-white tube, largest at its lower end, which is the thoracic duct, carrying the contents of the lacteals up into the region of the neck, where it joins the circulatory system.

F. H. King.

River Falls, Wis.

IN THE LIBRARY.—SCHOOL INSPECTION.—VI.

32. *Teaching of Arithmetic. Importance of Discipline.*—Having heard the teaching of the fifth-year pupil-teacher, and either satisfied himself as to his fitness for being recommended for a provisional certificate, or made due preparation for so satisfying himself at a later period of his inspection or examination of the school, the inspector will proceed to take the arithmetic lesson of the fourth-year pupil-teacher (see § 20). And there are a few observations and suggestions which I desire to make in this place, before proceeding to treat of the course taken by the inspector in his inspection of this lesson, upon the general question of the teaching of arithmetic in elementary schools.

The successful teaching of arithmetic in a public elementary school for boys is eminently a question of order and discipline. In girls' schools the unsatisfactory results in arithmetic are probably due as much to defects of knowledge of the subject on the part of the teacher, as to defects order. But in boys' schools this is not the case. Our certificated masters have always been, within their range, good arithmeticians, and well qualified as a class both to teach the subject to their scholars, and to train their pupil-teachers to teach it. And if the results of their teaching have been in many schools unsatisfactory, the fault has been due as much to want of discipline as to anything else. And the discipline, it must be remembered, which is sufficient for teaching reading or writing, or any other subject, is *not* sufficient for the teaching of arithmetic. No serious mischief is done in a writing lesson by one of the scholars overlooking the work of another. And the evil produced by undetected prompting in a reading or geography lessson, though it is, of course, real and serious, is triffing by comparison with the harm produced by undetected copying and prompting in arithmetic. It happens also unfortunately that copying and prompting are particularly easy, and therefore specially difficult to detect, in arithmetic. One glance, or one whispered word, will often do the mischief. And teachers and examiners are

always apt to underrate the powers of children in carrying on these practices so as to avoid detection. In testing how far a class has mastered the instruction which it has received in a new rule of arithmetic, or in reviewing a class in back-work, or in conduction any examination in arithmetic, it is not sufficient to place the children a few yards apart from one another, or to give different sums to alternate children, or (unless there is ample space for spreading the children out so as to leave every alternate row of desks vacant) even to give different sums to every third child. Children who are lazy, and anxious to avoid the trouble of thinking, or who have been inattentive during a lesson, and are anxious to avoid being detected and blamed for such inattention, or who have been accustomed to copy, and are therefore not self-reliant, can exercise an ingenuity which is perfectly marvellous in obtaining help at such a pinch from their fellow scholars. No one who has not experience of schools would believe how far they can see, and how rapidly take in, the mode of working a sum pursued, or the result obtained, by their more clever or diligent class-fellows.

33. *Effects of Want of Discipline in Teaching Arithmetic.* — And the effects of this copying are as disastrous in arithmetic as its practice is easy. The way in which the evil works is this. A new process in arithmetic is taught to a class of children. The diligent and clever members of the class have taken it in quickly, while the slower or less attentive members have obtained a less thorough, or perhaps a very slight grasp of the subject. The teacher proceeds, by setting examples to be worked, to test how far his instruction has taken hold of the class. At once the temptation presents itself to those slower or careless members of the class to copy from their quicker class-fellows. And, unless the teacher detects the attempt, he may be so far deceived as to think that the whole, or almost all, of the class have mastered what he has been endeavouring to teach them, and may therefore conclude that it is safe for him to pass on to the next stage in his instruction. The further he proceeds in this course, the more helpless and dependent become the children who have taken to copying, and the more necessary is it for them to persevere and become adepts in that deceptive practice, until at last the school is visited by an examiner, who takes such precautions as make it impossible for the children to copy, and then there comes a break-down which astonishes the teacher as much as the examiner and the managers. The reason why, after the introduction of the Revised

Code, so many boys' schools failed in arithmetic, was, mainly, that copying had been much more general than was suspected. The schools do much better in this subject now than they did on the first introduction of the Revised Code. Yet the teachers are no better trained in it, and their methods of teaching are very much the same. But the payment by results, and those results being tested by inspectors, who adopt measures which render copying impossible, have forced the teachers to adopt similar measures; and the effect has been a general improvement in the arithmetical acquirements of the scholars.

34. *How to Stop Copying in Teaching Arithmetic.*— There is only one way of making sure that copying in arithmetic is not practised in a school and that is to make it impossible. It is absurd to talk as if coyping could be stopped by appeals to the children's honour, or by punishment of those who are detected in the practice. The sense of honour in children, in an elementary school, cannot be expected to be greater than that of Eton boys, or undergraduates, or candidates for the Civil and Military Services, and for Holy Orders. The code of honour of the examinee is naturally a different one from that of the examiner; and what examinees at the public schools and universities will freely do, unless prevented, children in elementary schools will do. As for punishment, idle or slow boys will run the risk of it. Detection is not certain, but the trouble of having to apply the mind to a difficult question is most certain. So that *the only real way to stop copying in a school is to make it impossible.* Pupil-teachers who have charge of the lower classes should always be trained in simple mechanical methods of giving from three to six different examples at once, so as to make it impossible for their scholars to copy; and they should be required to use such mechanical methods with their classes whenever they are reviewing or testing progress in arithmetic. They should also be taught, when taking a new process in arithmetic with their classes, always to work through a certain number of examples, orally, with the children. on the black board, taking care to make those who are usually slow, inattentive, or inaccurate in arithmetic do the greater share of this work. It is marvellous what a reform is made in the arithmetic of a school when once steps have been taken to render copying impossible. Boys who have been inattentive, learn to attend; boys who have been in the habit of relying on others, get the habit of self-reliance, and find themselves so much happier and better that it becomes no very difficult matter, with a little care and judgment,

to maintain that habit in them. And this change in their habits, as regards arithmetic, affects not only their progress in that subject, but improves their capacity and their work in all the subjects taught in the school. It is, therefore, as I have said, impossible to overrate the importance of preventing copying in arithmetic in a school, and the inspector will make a point of inquiring, in the course of his inspection, what methods are adopted in the school to secure this result.

35. *Pupil-Teachers to be Questioned on Method.*— He will also inquire, as part of his general inspection of the school, how far the multiplication table is learnt; whether it is the practice of the school to teach it up to twenty times instead of stopping, as is usually thought sufficient, at twelve times; and whether the knowledge of it is secured and rendered readily available by frequent and regular repetition of it, at least throughout all but the highest classes in the school. He will inquire what system of mental arithmetic is in use in the school; and whether the pupil-teachers, or at any rate the seniors among them, are acquainted with handy methods of working rules by shortened processes. It will be found to have a great and most wholesome effect if the inspector, when holding the collective examination of pupil-teachers, will call up the third, fourth, and fifth year pupil-teachers, or some of them, and question them orally as to the methods adopted in their schools in respect of these and similar matters. By so doing the inspector will not only get some light to guide him in his forthcoming inspection, and will learn something of the intelligence of pupil-teacthers, when taken out of the ordinary routine of their paper work; but he will also awaken in their minds a desire to study method, when they see what importance is attached by the inspector to all the processes which they pursue in the exercise of their profession. A very good opportunity may be found for doing this at the collective axamination, by the inspector, when he calls out older pupil-teachers to work their Euclid orally on the blackboard. I used, when acting as an inspector, always to give an oral examination in Euclid, as well as the written one, at my collective examinations; of course not allowing the same letters as are employed in the text-book to be affixed to their figures by the examinees. I found that this practice had a most salutary effect on the study of Euclid among the pupil-teachers, as the principal teachers of the school were generally present (as well as many managers and others), and were ashamed that their pupil-teachers should break down in so public a manner. I also

found that I was very often able to use that opportunity to put one or two unexpected questions to the senior pupil-teachers on method or other matters which I had reason to think were apt to be neglected in thes schoools.

36. *Fractions to be Taught next after the Simple Rules.*—The new Code does not require vulgar fractions to be taught below the sixth standard (see Appendix I.). The inspector cannot therefore, of course, insist on any instruction being given in fractions in elementary schools below that standard. But he can point out to teachers how defective and slipshod all teaching in arithmetic must be in which fractions are not introduced, and can encourage them to begin instruction in fractions as early as possible. When the Revised Code was first introduced, fractions did not form part of the standard examination at all; and many schools in which that subject had been regularly taught, gave it up and confined themselves to the standard course. I was so persuaded of the evil of this, that I issued a circular to the effect that old established boys' schools would still be examined in fractions, and that those in which instruction in this subject was maintained would have a better general report. My own conviction is that teachers will find that *it answers, for the mere purposes of the Standard examination, to teach fractions to all their classes immediately after the first four simple rules;* while I think there can be no question that the general effect of pursuing this course will be excellent. The teaching of arithmetic will thus become much more sound and intelligent, and can aslo be made much more interesting to the children. I do not believe that, in the long run, teachers would find they had lost any time, or any grant on arithmetic, by teaching vulgar fractions to their third and fourth standards, and decimal fractions to their fifth standards; but rather that the time was, in every sense, well bestowed in securing to the children that their arithmetical training was really sound and scientific, which it never can be until they have learnt something of fractions. The gain, too, in the popularity of the schools among the intelligent artisans and other skilled labourers would be very great, and more would be done by such a course than by anything else to remove one of the great scandals of our elementary schools, viz., that they turn out the mass of their scholars (who never reach the sixth standard) so deficient in their knowledge of arithmetic, that it is useless to attempt to give them any technical education until they have first gone through a course of improved arithmetic. I am

quite aware, however, that while the standard course of arithmetic remains as it now is, and requires the teaching of the compound rules, of the weights and measures, and of practice and proportion, before vulgar and decimal fractions, the inspector can do nothing in this matter except exhort and encourage. Earnest exhortation and hearty encouragement will, however, do much more than people suppose.

37. *Inspection of an Arithmetic Lesson. Three Divisions of the Subject.* — With these general principles in view respecting the teaching of arithmetic, the inspector will proceed to criticize the arithmetic lesson which I have supposed is to be delivered before him by the fourth year pupil-teacher. And the first thing which he will have to consider, in directing his attention to this particular lesson is, *with what part of the art of teaching arithemtic, is this lesson concerned?* In teaching arithmetic, there are three essential parts — *new work*, *practice*, and *review*. The inspector will have inquired during the above-mentioned interval (see § 25), or he will inquire before the lesson begins, with which of these three divisions the lesson of the fourth-year pupil-teacher is to be concerned, and will look carefully to see if the pupil-teacher understands the distinction of the provinces of these divisions.

38. *First Division. A Lesson of New Work.* — If the lesson is one of *new work*, that is in which the class first breaks ground on a new rule, the great points for the inspector to look to are —

(*a*). Is the teacher thoroughly master of his subject? Does he treat of it mechanically, or does he seem saturated with it, so that he can put it in many various ways, and can illustrate it largely?

(*b*). Is he clear and logical in his treatment? Do the parts of his lesson lead up to one another, and to the conclusion, by well-arranged, clear, definite, and yet easy steps, so that each one suggests the preceding and the following?

(*c*). Does the lesson show thought and preparation? Does he simply adopt the line of any well-known good text-book, in his arrangement of the subject, his examples, and his reason for the different processes, or has so far thought over the matter, as to give it a turn of his own? *No intelligent teacher, however young, can think over his work out of school, and by himself, without giving it some originality of aspect.*

39. *Illustration of an Arithmetic Lesson of New Work.* — For example, let us suppose it is *a first lesson on multiplication of decimals.* I select this subject because it is one in which the mechanical rule is ex-

ceedingly simple and easy, but in which the reasons for the rule, though perfectly capable of being explained and understood by a class, are not so simple, and will bring out good teaching; while at the same time, besides its importance in a mathematical aspect, it is impossible to deal satisfactorily with division of decimals, or indeed to obtain any grasp of decimal fractions, until the principles upon which the reasons for this rule depend are apprehended; whereas, when once they are grasped, division of decimals becomes as simple an affair as division of money or avoirdupois.

And let us suppose that the lesson is designed to last forty-five minutes —from 11:40 to 12:25 (see § 20). Let us further suppose that not only has the pupil-teacher *prepared his lesson carefully*, (see § 10, 21), and taken counsel from the master, if there was any point in respect of which he was not clear in his own mind, or not satisfied that he could make it clear to others, but also that he has taken the precaution to *tell his class beforehand, that they are to have a lesson next time on this subject, and has required them to avoid waste of time by learning the mechanical rule in preparation.* Let us, in short, suppose that the teacher has not neglected ordinary precautions for making the most of his three-quarters of an hour's teaching. Then the scheme of the lesson will be something of this kind:—

(1.) *Five minutes.* Question on back work. For example: On powers of numbers; on the true meaning of multiplication; on the true meaning of the point in decimal fractions, and its function, as the exponent of the power of ten which is implied in the unexpressed denominator; on addition and subtraction of decimals.

(2.) *Fifteen minutes.* The mechanical rule for multiplication of decimals repeated by two or three boys in different parts of the class, as a sample how far the class has mastered the process mechanically; and a few short examples, such as can be done wholly, or almost wholly, in the head, worked for the same purpose.

(3.) *Twenty minutes.* The reasons for this rule developed and explained. Law, that the product of powers of a number is found by taking the sum of their exponents, stated, demonstrated, and illustrated. Easy examples given, and questions asked, on the application of the law to integral numbers. The law applied to the process of multiplication of decimals, and to the rule for that process. Rule thus shown to be a mechanical process of applying that law.

(4.) *Five minutes.* Recapitulation, with application of above theory to three or four short, easy, examples.

40. *Difference between Lesson of New Work and Lesson of Practice.*—A lesson of new work in arithmetic should, *mutatis mutandis*, be something of this kind: and it is clear that in inspecting such a lesson the inspector will have a very different work on hand from the inspection of a lesson of practice or of review. And it must be observed that I mean by a lesson in new work an absolutely *first* lesson in a rule or process. The inspector, when the notes of the intended lesson are put into his hand by the pupil-teacher, will be careful to ask how far the lesson is really on an absolutely new rule. All lessons, except the first, on a given rule, I call lessons of practice; and I distinguish them on the one hand from lessons of new work, and on the other from lessons of review, which deal with a wider range of recapitulation, and in a more miscellaneous manner. Not that there is not a certain amount of theory to be inculcated in lessons of practice. The reasons for every process should be constantly kept before the children's minds whenever working arithmetic. But that practice, and not explanation of theory, is the main object of these lessons of practice.

41. *Second Division: A Lesson of Practice.*—In inspecting a lesson of new work in arithmetic, the inspector will look more to the teacher (according to the hints given above, see § 38) than to the class. In inspecting *a lesson of practice*, he will almost look more to the class than to its teacher. Let us suppose that the lesson is the next lesson on the same subject after a lesson of new work. The great points now for him to regard are—

(*a*). Are copying and prompting absolutely unknown? And does the class work as if they were unknown? That is, *is each member of the class, to the extent of his abilities, self-reliant?*

(*b*). *Does the teacher sort his class?* That is to say, does he find out quickly and accurately which boys have taken a firm and clear hold of the instruction he gave them in the last lesson, which have but an infirm grasp of it, and which (if any) have failed altogether to comprehend it?

(*c*). Does he understand that he ought to administer a *different treatment to these different sections of his class;* to push on the first division, and give them more and harder examples, and to select some of the best of them in turn to explain and drive home the subject to the second division, while he himself draws the third division, or worst laggards,

OFFICIAL DEPARTMENT.

QUESTIONS AND ANSWERS.

Q. As the law now reads, has a county superintendent the right to limit second grade certificates?

A. There is no provision for limiting second grade certificates. When such a certificate is issued, by provision of the law it is to be in force and effect two years, and qualifies the holder to teach any public school in the superintendent district, where issued.

Q. Can a school district hold a special meeting and reconsider the vote at an annual meeting, authorizing the board to provide free textbooks?

A. Yes. Under the general authority given school districts to "alter, repeal, and modify their proceedings as occasion may require," any action of an annual meeting may be rescinded at a special meeting subsequently held, except the election of officers, and votes concerning taxes for the payment of indebtedness already incurred.

Q. Is a verbal promise of individual members of a district board to give the school to a certain teacher binding, in such a degree as to found a claim for damages upon failure to elect that teacher at the meeting of the board?

A. No. The statute upon that point is explicit: "No act authorized to be done by the district board is valid, unless voted at a meeting of the board."

Q. Can a district board refuse to hire a teacher after a vote at the annual meeting, unanimously declaring in favor of that person's employment?

A. Yes. The law does not authorize the district to determine, by vote, who shall or shall not be employed to teach. Such votes are advisory, merely, and express the sense of those present and voting only. The district board only can determine that matter.

Q. If other resources are sufficient, is it necessary for a school district to raise any tax in order to participate in the apportionment of public school money?

A. No. The only tax necessary to be raised is the tax determined by the county board of supervisors, to be raised by the several towns, villages and cities.

Q. The district at the annual meeting voted that the school, for the winter term, shall be taught by a male teacher. The board have engaged a female teacher. Is this legal?

A. No. The law expressly authorizes school districts at the annual meeting to determine whether the school shall be taught by a male or female. The board is bound by such determination. They are the agents of the district, to do that which the district, under the law, directs to be done. If, for any reason, the board cannot carry out the directions of the district, a special meeting may be called to alter or modify the proceedings of the annual meeting.

STATE EXAMINATIONS FOR TEACHERS' CERTIFICATES.

At the examinations for State Certificates, to be held in Madison, commencing on Monday, Dec. 26, by order of the State Superintendent, the following order will be followed:

Monday:	A. M.	Arithmetic. History of the U. S.
	P. M.	Geography. Art of Teaching.
Tuesday:	A. M.	Algebra. English Grammar.
	P. M.	Constitutions. Mental Science.
Wednesday:	A. M.	Geometry. Botany.
	P. M.	Physiology. English Literature. (1.)
Thursday:	A. M.	Physics. General History.
	P. M.	Reading. Political Economy.
Friday:	A. M.	Zoology. English Literature. (2.)
	P. M.	Theory of Teaching. Geology.

Penmanship and Orthography will be judged from the papers in other branches submitted to the Board. Orthoepy will be tested in connection with Reading, in which the examination will be oral. Descriptive and Physical Geography will be tested in one paper. In English Literature there will be two papers, one historical, for the limited certificate, and one critical in addition for the life certificate.

Candidates are expected to note carefully the times set for the different branches, and present themselves at the time appointed for the branches in which they wish to be examined.

J. W. STEARNS,
J. Q. EMORY,
T. B. PRAY.

TENTATIVE PROGRAM OF THE WINTER MEETING OF THE WISCONSIN TEACHERS' ASSOCIATION, TO BE HELD AT MADISON, BEGINNING TUESDAY, DEC. 27, 1887.

At our urgent request, President Salisbury has furnished for this number of the JOURNAL the following outline of plans for the winter meeting of the Association. The complete program will appear in our December number.

Tuesday evening, Dec. 27. Lecture on "The Value of Music as an Educational Factor." H. E. Holt, Supervisor of Music in the Public Schools of Boston, Mass.

Wednesday and Thursday, Dec. 28–9, the following topics, viz.:

1. Committee Report on "Elimination of Unprofitable Work from the Curriculum of Graded Schools." A. R. Sprague, Chairman.

2. Committee Report on "Wisconsin Educational Exhibit at Chicago." J. W. Stearns, Chairman.

3. Paper on "Lines of Progress," by Hon. J. B. Thayer, State Superintendent.

4. "Teachers' Institutes—Present Problems." Discussion led by Prof. H. D. Maxson and Hon. W. H. Chandler.

5. "Course of Study for County Schools." Discussion led by Prof. L. D. Harvey.

6. "Leading County Schools in Illinois," by an Illinois Superintendent.

7. "Wisconsin Summer School of Science,—Shall it Become a Permanent Institution?"

8. Committee Report on "Legal School Age." J. W. Stearns, Chairman.

One or two topics, as well as the names of several persons, are omitted from this outline, because acceptances have not yet, at this writing, been received.

PRINCIPALS OF FREE HIGH SCHOOLS IN WISCONSIN.

J. M. Turner,	Ashland.	H. J. Menzie,	Bay View.
John O'Hara,	Antigo.	S. F. Withrow,	Beaver Dam.
I. N. Stewart,	Appleton.	C. A. Hutchins,	Beloit.
J. H. Ackerman,	Arcadia.	A. F. Rote,	Berlin.
Summer H. Hilliard,	Argyle.	John W. Leary,	Black Earth.
L. W. Wood,	Augusta.	Dwight Kinney,	Black River Falls.
George Burton,	Avoca.	W. H. Bloom,	Bloomer.
W. J. Brier,	Baraboo.	A. G. Zimmerman,	Bloomington.

C. H. Sylvester,	Boscobel.
D. S. Gibbon,	Brandon.
J. A. Eakin,	Brodhead.
W. S. Axtell,	Burlington.
J. A. Jeffery,	Cadott.
S. A. Connell,	Chilton.
C. R. Long,	Chippewa.
A. E. Schaub,	Clinton Junction.
Sam. F. Grubb,	Clintonville.
J. F. Sims,	Colby.
A. P. De Laney,	Columbus.
C. C. Merriman,	Darlington.
Geo. Collin,	Delavan.
C. A. Goggin,	Depere.
J. W. Livingston,	Dodgeville.
J. W. Nesbit,	Durand.
Etta Carle,	East Troy.
J. K. McGregor,	Eau Claire.
L. E. Gettle,	Edgerton.
D. D. Mayne,	Elkhorn.
J. A. Hancock,	Elroy.
H. H. Jacobs,	Evansville.
John Quick,	Fennimore.
H. M. Older,	Friendship.
Irving N. Mitchell,	Fond du Lac.
J. Q. Emery,	Fort Atkinson.
L. S. Keeley,	Fox Lake.
O. R. Larsen,	Fort Howard.
—— Youman,	Fremont.
J. H. Gould,	Geneva Lake.
Miss Mina Whiting,	Glenbeulah.
B. R. Goggins,	Grand Rapids.
J. C. Crawford,	Green Bay.
H. C. Curtis,	Hartford.
H. B. Lathe,	Hazel Green.
Dennis J. Murphy,	Highland.
Lee Swift,	Hillsborough.
Jas. H. Derse,	Horicon.
T. B. Hartley,	Hudson.
W. H. Hickok,	Humbird.
C. H. Keyes,	Janesville.
H. F. Wieman,	Jefferson.
C. H. Leach,	Kenosha.
M. McMahon,	Kewaunee.
John C. Camp,	Kiel.
H. L. Terry,	Lake Mills.
E. E. McDermot,	Lancaster.
J. E. Hoyt,	Lodi.
J. M. O'Brien,	Little Wolf.
W. H. Beach,	Madison.
W. A. Hodge,	Marshall.
Geo. S. Grubb,	Mauston.
Horace Gibson,	Mayville.
Geo. F. Witter, Jr.,	Marshfield.
W. W. Kilgore,	Mazomanie,
H. J. Evans,	Menasha.
J. G. Adams,	Merrill.
J. B. Logare,	Montfort.
Chas. M. Fox,	Merrillan.
Enoch Vernon,	Middleton.
G. E. Cabanis,	Mineral Point.
C. F. Niles,	Monroe.
L. S. Pease,	Montello.
Wm. A. Cundy,	Mount Hope.
Chas. R. Pickering,	Muscoda.
H. J. Bowell,	Necedah.
C. W. Cabeen,	Neenah.
E. B. Oakley,	Neillsville.
E. E. Fowler,	New Lisbon.
Francis Cleary,	New London.
W. H. Williams,	New Richmond.
F. W. Winter,	West Depere.
R. B. McClenon,	Oconto.
J. B. Babcock,	Omro.
R. E. Blount,	Oregon.
R. H. Halsey,	Oshkosh.
D. E. Cameron,	Pepin.
Otto J. Schuster,	Pewaukee.
Otto Gaffron,	Plymouth.
W. G. Clough,	Portage,
F. H Blondell,	Port Washington.
James O. Luce,	Potosi.
James Melville,	Poynette.
Alfred Jones,	Prairie du Chien.
R. B. Hazard,	Prescott.
J. W. Hazard,	Prairie du Sac.
A. R. Sprague,	Racine.
A. B. West,	Reedsburg.
H. R. Smith,	Richland Center.
F. N. McMahon,	Ripon.
A. W. Burton,	River Falls.
C. F. Ninman,	Sauk City.
W. J. Burns,	Sextonville.
J. G. Skeels,	Sharon.
L. D. Roberts,	Shawano.
E. G. Haylett,	Sheboygan.
W. E. Pembleton,	Seymour.
L. M. Roberts,	Sheboygan Falls.
H. Silver,	Shullsburg.
L. H. Clark,	Sparta.
J. H. Terry,	Spring Green.
F. W. Cooley,	Stevens Point.
Wm. B. Monaghan,	Stockbridge.
C. F. Cronk,	Stoughton.
Wm. O. Brown,	Sturgeon Bay.
I. M. Buell,	Sun Prairie.
G. W. Reigle,	Tomah.
C. O. Marsh,	Two Rivers.
W. H. Harris,	Unity.
J. A. Ayleward,	Viroqua.
M. G. Stillman,	Walworth.
C. F. Viebahn,	Watertown.
—— Lowel,	Waupaca.
F. C. Howard,	Waupun, Dodge County.
F. N. Fowler,	Waupun, Fond du Lac County.
Hugh McIndoe,	Wausau.
A. W. Smith,	Wauwatosa.
E. W. Walker,	Westfield.

W. J. Hughes,	West Salem.	Chas. Fenelon,	Weyauwega.
W. D. Gibson,	Whitewater.	J. A. Buckley,	West Bend.
W. T. Wills,	Wonewoc.		

ENROLLMENT OF THE FALL INSTITUTES.

Adams, 53.	Door, —.	Manitowoc, 113.	Rock, 2d Dist., 78.
Barron, 44.	Dunn, 143.	Marathon, 93.	Sheboygan, 175.
Brown, 116.	Eau Claire, 45.	Marquette, 50.	Shawano, 62.
Buffalo, 57.	Grant, 99.	Milwaukee, 74.	Sauk, 110.
Burnett, 17.	Green, 101.	Oconto, 64.	Sauk, 46.
Calumet, 79.	Green Lake, 85.	Outagamie, 101.	Taylor, 44.
Chippewa, 30.	Iowa, 130.	Ozaukee, 66.	Trempealeau, 98.
Clark, 49.	Jackson, 65.	Pepin, 25.	Walworth, 100.
Columbia, 108.	Juneau, 157.	Polk, 100.	Washington, 69,
Crawford, 58.	Kenosha, 76.	Price, 21.	Waukesha, 93.
Dane, 1st Dist., 59.	Kewaunee, 56.	Racine, 10,	Waupaca, 160.
Dane, 2d Dist., 96.	Langlade, 47.	Richland, 196.	Winnebago, 81.
Dodge, 102.	Lincoln, 31.	Rock, 1st Dist., 72.	Wood, 61.

EDITORIAL.

We have a new kind of school literature at present, a kind becoming very abundant, very cheap, and much of it very excellent. It may be said to have come into existence within a few years. Ten years ago it was practically unknown, and five years ago it was comparatively scant. Now the great publishing houses are issuing it in abundance, and at prices which seem almost fabulous. There is clearly a large demand for it, and on the whole that large demand is one of the most encouraging educational signs of the times. We are making reading in the school mean something. Instead of having it a dull, dreary drill on worn out scraps of literature, such as the school reader, (which is now in Wisconsin as unchangable as the laws of the Medes and Persians, presents to class after class of little folks,) these supplementary books offer them fresh matter, literary wholes in place of fragments, something instructive, interesting and inspiring. This completely transforms the reading exercise. It becomes what it ought to be, a practical exercise in the art of getting out of books what is in them. This is the proper purpose of reading, and the way to learn to do it is unquestionably to do it. Put some of these admirable cheap books, books of good literature, into the hands of the children; give them a taste of the interest these afford; and then you may almost leave them to teach themselves to read. This way of inspiration is infinitely better than the old way of constraint. And in reading such books they will not only learn *how* to read, but, what is much more important, *what* to read. Their taste for good, wholesome, helpful literature will grow with their power to read, and this will deepen and enrich their whole nature. We know of no better discussion of this matter than that found in the article by Horace Scudder, entitled "American Literature in Schools,"

portions of which were published in the JOURNAL for August. Did you read it? If not, turn to it and see if it has not suggestions which you need to consider.

"TOMFOOLERIES of the schools" is certainly a phrase to arrest the attention. Are there any "tomfooleries of the schools?" Here, for example, is a class in spelling patiently studying and writing out a list of words which hardly one of them ever fails upon. They knew those words before the exercise was given out as a lesson, and they are simply going through an empty and useless from. Here is another engaged with a reading lesson which most of the children can repeat verbatim without their books. Another is doing such work as this: "Three time three are how many?" "Nine." "Now count your sticks and see." And another is spoiling copy-books by writing each successive line a little worse than the one preceding. Tomfoolery all of it! foolish trifling with pupils! and the aimlessness of it at length affects their spirits, so that they yearn to get into a world of realities, where what one does amounts to something. Or, again, witness there formalities. The class is to have an exercise in penmanship: "Position. Monitors. Pens. Books. Blotters. Open your books. Take your pens. Write as I count, making one letter for each number: one, two, etc." Or, again, with grown pupils who ought to be learning independent self direction if they have not already learned it, "First section to the board: rise; pass; turn; erase; write your name; etc." Tomfoolery again, a roundabout, rigmarole, wasteful and stupid way of doing a very simple thing. We do not wish to be understood as condemning all set forms of doing things in school. These are necessary and very helpful in securing rapid work. But they should be sought and used because they are found to expedite the proper work of the school, and not because some one else, in entirely different circumstances it may be, used them effectively. In short, genuineness is as valuable in the schoolroom as any where else; a practical, direct, business-like way of doing what ought to be done, with as little nonsense as possible. Hold to useful forms, but strip off all useless ones, to useful work and throw aside the useless, and let thoroughly business-like spirit and ways characterize the school.

"WE must furnish the teachers needed by the county," some county superintendents say; and accordingly they issue certificates to quite a number of applicants whom they believe to be incompetent. The result of this policy can be easily shown. As an examiner, the superintendent is appointed to guard the schools of the county from incompetent teachers. His certificate is accepted by school clerks as evidence of fitness to teach. The clerks desire to save expense to the community, and too often select from these "competent" persons the one whom they can employ for the least money. Thus there is a constant tendency to employ the least capable, who usually are ready to accept the lowest compensation. Thus wages drop to such a figure that efficient persons do not wish to teach, or seek employment in some other county. As with water so here there is a tendency to seek the lowest level, and the county is led into the

W. J. Hughes,	West Salem.	Chas. Fer
W. D. Gibson,	Whitewater.	J. A. P.
W. T. Wills,	Wonewoc.	

able teachers. While this
B is more exacting. He holds
ounty A are drawn over to his
ools are better. At the same time
a certificate at home, drift over to
teachers needed by the county." The
It results in driving away the best teach-
poorest from the neighboring county to
observer will have no difficulty in selecting
yielding to this supposed necessity has produced
A county superintendent ought to be considerate
but wisely considerate of them. He certainly should
which will bring confusion and strong dissatisfaction, be-
prepared for them. But this consideration for things
is a very different thing from the short-sighted policy of always sup-
such material as may present itself at the examinations.

ENROLLMENT OF T

Adams, 53.	Door, —.
Barron, 44.	Dunn, 143.
Brown, 116.	Eau Claire
Buffalo, 57.	Grant, 9
Burnett, 17.	Green,
Calumet, 79.	Greer
Chippewa, 30.	Iow
Clark, 49.	Jac
Columbia, 108.	J
Crawford, 58.	
Dane, 1st Dist., 5	
Dane, 2d Dist.,	
Dodge, 102.	

THERE is a fair and simple test of the efficiency of a grammar or high school, which should be more generally understood and applied than it is. We say of a grammar and high school, because the forces which make it a test in these are not in play in schools of a lower grade, or not to the same extent. These forces are found in the nature and conditions of the pupils. After they become thirteen years old children are of service as workers, and can contribute to the income of the family. Moreover, they begin to look forward to practical activities, and desire to exchange school for work. They will desire this very earnestly unless the school takes strong hold upon their interests, and a large number of them will secure the consent of their parents to stay out and work. Here, then, is the test of the vitality of the school in its higher grades. Does it hold a fair per cent. of its pupils to enter the high school? and does it hold a fair per cent. of these to complete the high school course? When the attendance upon a high school is falling off without a corresponding decline of population in the town, there is occasion to enquire carefully into the cause. Some fluctuation from year to year will result from various reasons, but its effect on the total enrollment will be small. If there is a steady decline for two or three years the school is lacking in vitality. It needs to have fresh life infused into it. If, on the other hand, there is a steady growth beyond the growth of the town there is strong reason to believe that the school is doing good work. The greatest force for building up a high school is thorough, vigorous, progressive work. This gives the pupils a sense of power and of progress, keeps their interest alive, and kindles their ambition. The spirit is infectious. It permeates the lower grades, and inspires the pupils with a desire to reach the higher work. It pervades the homes so that the families believe in the high school, because their children enjoy it and are manifestly benefited by it. There is thus a tonic influence in the community, so real and pervasive that an intelligent observer can

ıtly assure himself of the excellence of the high scool without entering its
On the other hand, a stagnant or declining school is indicated by a small
t, indifference or dislike on the part of the pupils, and torpidity or la-
y on the part of the community. In fact, a high school ought to live
vn inherent vitality, and not by sufferance. By doing earnest, genuine,
able work, it should draw to itself the stronger and more ambitious young people, and when it does this it will not lack the hearty endorsement of the community.

OUR DRAWER.

READING CIRCLE MATTERS.

WORK FOR THE SECOND MONTH.

ELEMENTARY. PAGE—pages 70 to 136. HISTORY—to page 80. PHYSIOLOGY—Chapters four, five and six.

ADVANCED I. QUICK—to page 45. FITCH—the second and third lectures. HISTORY—pages 354 to 387. POLITICS—to chapter XII.

ADVANCED II. SULLY—chapters five and six. BROOKE—the second chapter. SWINTON—Bacon and Milton.

A CRYING EVIL.

"I recently met a teacher of whom I inquired what she was going to do with a roll of papers in her hand. The conversation brought out the fact that three nights in every week she took home between fifty and sixty papers to be marked, beside marking as many spelling papers *five* nights in the week before leaving the building. Beside this, every four weeks there is an examination (I don't know what this other examination is called, probably a review, or written exercise) upon every thing the poor children have ever heard of, and averages, and averages of averages are made out. Please remember in thinking of this that the teacher is in charge of an intermediate grade, and that her experience is less severe than that of the teachers in the higher rooms.

I believe such a condition of work, so-called, is wrong, is not beneficial to the pupil, and is terribly injurious to the teacher. An amount of drudgery is imposed which exhausts the teacher's strength and leaves neither time nor inclination to make fresh preparation for the next day's work. I know I need not fill many sheets of paper to convince *you* personally that an evil exists wherever such work is required; but I should like to add a word in defense of *some* of the teachers who are charged with not being readers. There are many whose round of work is so mapped out for them that none of the pitiful, petty details can be omitted, and when this round is completed, they turn to trivialties as an escape-

valve, until all expectation of being anything but routine-teachers is extinguished. Any effort which may be made to read—in the sense of studying—is so meagerly rewarded by the result gained by a "fagged-out" brain, that the effect is discouraging. There are, of course, teachers who are intellectually indolent, but there are others who are actually driven from a well-planned course of reading by the demands of schoolwork which counts for very little in the real growth of the pupil.

This is no new thing, I know, but it is time there was less of it in Wisconsin. I trust you can say something which will reach the principals and superintendents who plan this scheme, but as carefully arrange that but little of the toil of it comes into their han ds." C.

CHAT WITH CORRESPONDENTS.

"I have enjoyed the selections "School Inspection" more than anything else on school management I have ever seen. They showed me myself as no other critic ever succeeded in doing. The critics tried hard enough, but I did not see the force of minor faults." L. E.

This remark in a private letter is very gratifying. We commenced in the May number of the JOURNAL the publication of Mr. Fearon's little book on "School Inspection," not now generally accessible to American readers. We did so from a firm conviction of the great value of its practical suggestions, not only to principals and superintendents who are called on to inspect schools, but also to teachers, and to teachers in all grades of work. It is English, and has many remarks applicable only to English Schools; but the great body of the work is as valuable to American as to English teachers. The very first portion published by us contained practical hints of the highest value and each subsequent portion has, as it seems to us, abounded in useful suggestions. This, however, is the first expression regarding the work which has come to us. We have been asking, "Is it possible that we were mistaken as to the usefulness of that treatise?" or, "Is it possible that subscribers do not take the trouble to read it?" If you have not, reader, turn back and look over the portions published; and make a note of the useful hints you find. We feel sure that if you do this you will turn back to the book for help and direction very many times hereafter.

Now that we are writing of the JOURNAL we shall quote the kindly words of an esteemed friend, which have lain in Our Drawer for some time. He had spoken in very high terms of Our Book Table, and then adds: Please don't think that I confine my commendation of the JOURNAL to its book notice. By and large, it was never before half so good as now; and I deliberately pronounce it the best periodical of its class that I have knowledge of." That from one of the educational leaders of the State, we place with satisfaction side by side with the the words of a district school teacher: "The JOURNAL helps me very much. Every month I get something from it which I can use in my school;" and the

statement of a county superintendent, "I consider the JOURNAL very serviceable to my teachers."

THE INSTITUTE PROBLEM.

Although these words were not intended for publication they are so pertinent, in connection with the remarks in our last number to which they refer, that they deserve a place in the open end of the drawer: "It seems to me that that 'Institute' problem is just now the most pressing of any relating to public school work. The 'course of study' demands for its use teachers who understand it, and at least *something* of the controlling purposes of those who prepared it, and the Institute comes nearest to reaching these county teachers of any of our educational agencies. I have found, however, that some of the most unfortunate mistakes regarding that course have been the outgrowth of attendance upon Institutes and misapprehension of the teaching there given, or blundering on the part of those in charge of the exercise. Moreover, in these meetings, only about one third of the teachers are reached at all.

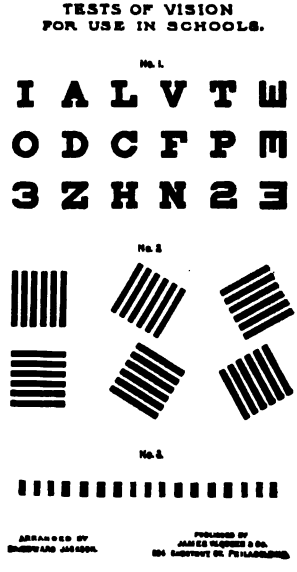
"The tendency to lengthen the school year and other causes have combined to shorten the Institute period, so that a large number of assistants are employed. This suggests what, perhaps, does not admit of too definite answer, whether the conductors employed are the best, most energetic, thoroughly *alive* teachers in the State, who can be induced to take hold of the work? And again, whether the practice of sending one man for several consecutive weeks to work all day long with a large class of varied attainments is the best use to make of time, talent and funds? Our wide-awake agricultural friends put more men and money into a two-days' Institute than the school men average in a week. Are they wiser in their generation?"

TESTING THE EYESIGHT.

It has for many years been known that the great majority of cases of myopia are due to the improper use of the eyes for near work; and by the examination of the eyes of very many thousands of children at different periods of school life, it has been amply demonstrated that in the larger proportion of cases the damage has been done by some fault in the method or condition of using the eyes for school work. In various countries of Europe the care of the eyes of school children has become the charge of special commissions, and medical officers appointed by the government; and the lighting of school rooms, position of scholars, hours of study, even the condition of the general health, and special capacities of the eyes of each individual pupil, are matters of official inquiry and concern.

In this country no elaborate system of official inspection and supervision is likely to meet with general favor. We must depend rather on teaching each in-

dividual, and each school or school district, to take care of itself; and if they are to do this, the first essentials are a knowledge of what constitutes good sight, and of what is a sufficient light for steady eye-work. Dr. Edward Jackson, of Philadelphia, has prepared for this especial purpose a series of tests for determining whether the eyesight of pupils is defective. The accompanying cut represents them. In it the tests are about one third the proper size.



For good sight the eye must be able to get distinct impressions of distant objects, must be free from any noticeable astigmatism, and must have sufficient power of "accommodation," for focusing near objects. The tests, three in number, are printed on a single card, on the back of which are given full directions for using them. The first consists of block letters, just visible in a good light, to a person with perfect distant vision at a distance of twenty feet, or six metres. The second test is a series of six sets of parallel lines, each set running in a different direction from the others. When there is any notable degree of astigmatism present, the lines in some one set will be clearer or can be distinguished at a greater distance than the others. The third test embraces a series of words printed in small block letters. These are so small that the greatest distance at which they can be read is about ten inches. But they can be read closer to the eye, according to the power of the eye to accommodate or for near objects; and by measuring the distance of the nearest point at which they can be read by an effort, even for an instant, the extent of this focusing power is determined. Of course, perfect distant vision will not enable an eye to stand the strain of school work if associated with deficient focusing power.

To test the light falling at a given point in a room various elaborate pieces of apparatus, called photometers, have been devised; but the most simple and practical method is for a person, who has previously determined that his sight was perfect in a good light, to try if he can see perfectly by the light in question, that is, let him take the card and see if he can read by the given light the letters of the first test at twenty feet, or the words of the third test at ten inches.

MATHEMATICAL SECTION.

A NEGLECTED CHAPTER.

A large proportion of teachers and pupils who appear at the usual public examinations, show by their work that they have been well drilled in the ordinary

process of finding the Greatest Common Divisor of two numbers which are not easily factored, but a very small proportion show any satisfactory knowledge of the principles on which the common process is based, or of the usefulness of either process or principles. It is surprising, when one considers how well the process has been learned, that pupils make so little use of it; and no less strange that they should be taught the process so thoroughly, and the principles on which it rests be so uniformly neglected, when one considers how few, how simple, and how useful are the separate principles underlying the process.

1. If a number will divide each of two numbers, it must divide their difference; also their sum.

Illustration: if 35, which contains 5 groups of seven, be added to, or subtracted from 49, or 7 groups of seven, the result will be a certain number of *seven's*.

2. A divisor of a number is the divisor of any multiple of that number.

Illustration: since 7 is contained in 21, it is contained in two or three times 21.

Further, it will be a source of constant advantage to the pupil to know that any number is divisible by 2 if its right hand figure expresses an even number; by 4 if its two right-hand figures express a multiple of 4; by 3 or 9 if the sum of its digits is divisible by 3 or 9, respectively; and by 5 if its right-hand figure is 5 or 0. Every child knows already the first and last of these, and can learn the others very quickly.

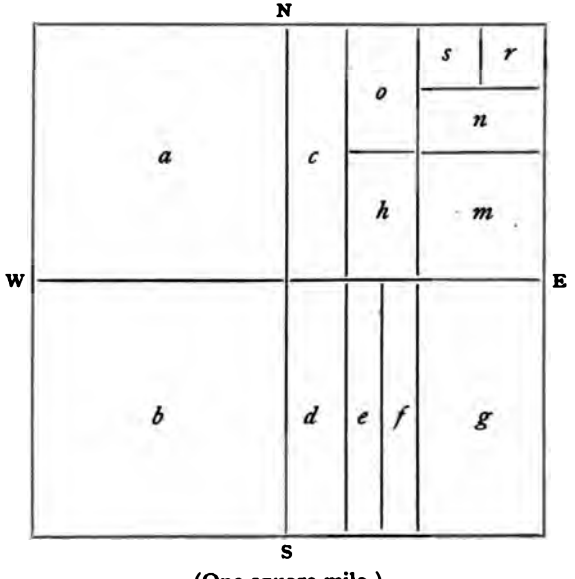
Suppose these principles be applied to an example taken from a text-book in common use: Find the G. C. D. of 458 and 2192. The regular solution is as here given:

		2192
458	4	1832
360	1	360
98	3	294
66	1	66
32	2	64
32	16	2 G. C. D.

The less number is multiplied by 4 (prin. 2,) and the result subtracted from 2192, (prin. 1.) We ought to use the multiplier 5 instead of 4, and subtract 2192 from the result, getting 98 as a remainder from one so-called "division" instead of two. Next, 98 ought to have been multiplied by 4 instead of 3, thus saving another "division." It is always best to use such a (quotient?) multiplier as will make the product as nearly as possible equal to the other number, whether larger or smaller is of no consequence. But it is of more importance to teach the pupil to stop *dividing* and to examine his remainders. Either 360, 98, 66, or 32 should show that the answer is 2. $360 = 10 \times 36$; 2, 3 and 5 are the only prime factors, and a glance at 458 shows that only 2 will divide it: but according to prin. 2, the G. C. D. must be contained in 360; hence 2 is the G. C. D., being the only factor of 360 that will divide 458. In like manner the G. C. D.

must be contained in 98 as well as in the original numbers; but 2 is the only factor of 98 that will divide 458; hence is the G. C. D. The main fact of "principle one" may be stated as follows: Nothing will divide two numbers except some factor of their difference. Whenever, therefore, the "difference" is small enough for us to find readily its prime factors, we are enabled to select the common factors at once, and are certain that there are no others. This fact is of great use when a fraction is to be reduced to its lowest terms. If inspection of the numbers does not show 2, 3, or 5 to be a common divisor, find the difference between the terms of the fraction, or between one of them and some multiple of the other; those factors of the difference which will divide one of the numbers make the *only* common divisor. It may be said in conclusion that "G. C. Divisor" is by no means the most important topic in the arithmetic; yet it has a distinct, definite, practical use, and besides is as valuable for discipline as any other part. Both utility and discipline are best secured by mastery and application of simple underlying principles, rather than of the formal process derived from them.

PRACTICAL WORK IN ARITHMETIC.



(One square mile.)

The above diagram may be placed on the blackboard, and a great variety of problems made by teacher and pupils which will have an air of reality about them, and may be directly applied in affairs of every day life. The following are only suggestive:

1. Find length, width and area of each subdivision.

2. Describe each subdivision; as, *o* is E. half of NW. qr. of NE. qr. of section, etc.

3. Find the value of different pieces at average price in your locality.

4. Find cost of fencing *e* and *n* with four 6-inch boards, costing $14.00 per M., with posts eight feet apart, worth 12c each; estimating that two men, whose labor is worth $1.50 per day, can build 15 rods in one day.

5. Apply same conditions to subdivisions *d* and *g*.

6. Cost *per acre* of fencing *d*, *e*, *n* and *g* as proposed?

7. If a man owns the whole NE. qr. of section, how much of his land is occupied by fences, as shown in diagram, allowing three feet each side of fence to lie waste?

8. What is the annual interest on value of fences and land occupied by them in NE. qr. of section?

9. Find value of wheat raised on *o*, twenty-five bushels per acre, sold at 75c per bushel.

10. Cost of raising same crop of wheat, allowing two dollars per day for plowing, dragging, sowing, one dollar per acre for harvesting, and let the straw pay threshers' bill.

11. Find profit per bushel, if interest is reckoned at six per cent. on cost of land and fences, and the yield is 20 bushels per acre.

12. Suppose the owner of *o* gets 15 bushels of wheat per acre, and the owner of *h*, by spending ⅓ more than given above in raising a crop, gets 30 bushels per acre. What are the actual, and what are the relative profits per acre?

If the conditions above suggested are not suited to your locality, let the pupils change them, and, moreover, supply the facts necessary for solution of the tenth question; substitute wire for boards in fourth, and otherwise adapt the questions to the conditions actually existing in your own neighborhood.

PROBLEMS.

1. A publisher wishes to issue an edition of 5,000 copies of an 18mo. book of 216 pages. How much paper does he need, allowing one quire to each ream for waste? G.

2. It is sometimes said that the people of the United States expended more money in the late civil war than would have sufficed to buy all the slaves in the United States in 1861, valuing them at their *own weight*, pound for pound, in silver dollars. Is the statement at all credible?

WHITEWATER, WIS. T. B. PRAY.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

IT is said that President Lincoln once gave the following advice to a friend: "Do not worry. Eat three square meals a day. Say your prayers. Be cour-

teous to your creditors. Keep your digestion good. Steer clear of all biliousness. Exercise. Go slow and go easy. May be there are other things that your special case requires to make you happy, but, my friend, these, I reckon, will give you a good life." Henry Ward Beecher's three rules of health were: "Eat well, sleep well, and laugh well." And he wisely obeyed them all.

IT is all very well to tell me that a young man has distinguished himself by a brilliant first speech. He may go on, or he may be satisfied with his first triumph; but show me a young man who has *not* succeeded at first, and nevertheless has gone on, and I will back that young man to do better than most of those who have succeeded at the first trial. — *Charles James Fox.*

A WISE old lady used to say, "The man who gets on best in this world is he who is most fertile in expedients." It seems, at first thought, as though anybody could be "fertile in expedients," but, when we come to inquire into the matter, we find that very few people are capable of pursuing more than one line of thought on any given subject. If that does not lead them to success, they seem to be helpless.

HUMORS OF THE SCHOOL ROOM.

THE following answer — it is needless to give the question — is worthy of a place in Mark Twain's collection: "The Seminole war was caused by the Seminole Indians intermarrying with the *Everglades* of Florida, who had been slaves."

THE words selected for an examination, with their definitions, were "aqueduct, a conductor," and "effervesce, to work." One of the sentences handed in was, "My father is an *aqueduct* and he has to *effervesce* very hard."

SOME time since the pupils of a primary school were told to bring to their teacher a slip of paper on which the parent was to write the date of the child's birth. The day came and most of the children proudly delivered their precious papers. One dear little girl was found crying bitterly. She had forgotten her *excuse.* "Why, my child, you did not need an excuse; you have not been absent." "No, no, but my *excuse for being born.*" And the tears fell fast.

IN teaching fractions a teacher took an orange to impress upon the pupils the conception that one was a unit. The rind was cut by a penknife into five parts, and each part taken off separately and the relation of pieces taken off to those remaining was fully explained. The teacher held the rindless orange in one hand and the rind in the other, and asked the class what she had in her right hand. A bright lad thoughtlessly answered, "The skin of a unit."

AN interesting story is told as happening last month to a pious young lady who taught Sunday school at one of the Adirondack resorts. Her class of small boys was struggling with verses from the Bible, and one of them read with painful deliberation, "And Zacharias went up into the temple to burn insects."

In the pause of astonishment that ensued a small hand went up: "Teacher?" "What is it, Thomas?" "Was he goin' to make a smudge to keep the black flies offen the Temple?"

SOME TEACHING DEVICES.

ONE WAY OF RECITATION. First see that each member of the class has a number. If the class is large, send the odd numbers to the board just as soon as the class is seated. Let the even numbers prepare to write on paper or slates. Pronounce a few of the difficult words in the lesson for a spelling exercise, written of course. Change places or papers and correct the work. This need take but three minutes.

Next, for a brief test, ask questions that may be answered by short statements. Change and correct. Next send even numbers to the board, give each a separate bit of work to put upon the board, and while they are at that, call on the odd numbers for topical recitation on review lessons or on the advanced work of the day. Keep every pupil busy.

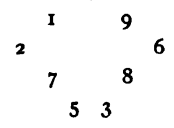
HOW TO USE PICTURE CARDS. Cut good, clear pictures from catalogues, specimen pages of readers, papers, tourists' guides, etc., and mount them on card board. Use these as may be suggested, or as follows:

1. Primary division may write lists of objects seen in the picture.
2. Intermediate division may write sentences containing names of objects.
3. Advanced division may write names of objects in the different cases; may apply limiting adjectives to the names of these objects; apply qualifying adjectives, etc.

The thoughtful teacher will discover many methods of using picture cards for language and grammar; he will soon be able to turn this work into actual compositions. Methodical compositions are what we need in the school.—*Country School Council.*

IN PRIMARY READING. Take a number of envelopes. On the outside of each some interesting extracts, of poetry or prose, are written. Inside, are bits of cardboard, on each is written a word of the quoted passage. The child is to put these words together to form the sentiment on the outside. A question in geography and its answer may be placed on the envelope, or a fact from history may be written there, or a definition from arithmetic. The device admits of many variations.

IN NUMBERS. Numbers arranged in a circle furnish a convenient exercise either for addition or multiplication, thus: Beginning with each number in turn, we have new sets of combinations, and to lengthen the example the addition can be carried around the circle as many times as the teacher wishes. To drill on the addition or multiplication of two numbers, 4, or 8, or any figure may be written in the center and be united with each number separately, or used as a multiplier.



CIPHERING MATCH. A ciphering match is a profitable and interesting Friday afternoon exercise for country schools. The plan is similar to that for an old-time spelling match. Captains choose their men. Two of the same grade—one from each side—pass to the board. The challenged party names the work; for instance, "Multiply by 25—Divide by 33—Addition of Common Fractions—Interest, rate 8 per cent., etc. The teacher gives the data, and the test is to secure the correct result *first*. The defeated one takes his seat, and another man from his side takes his place. The one who stays at the board longest is the champion. The results are accuracy and rapidity in the common and practical arithmetical calculations. Try it.—*Ind. Sch. Jour.*

A SCHOOL LOG BOOK. The teacher may add interest to the school for a time, and give different pupils some real work in composition, by securing a suitable blank book and asking the school to select each week a secretary to keep in this book the log or diary of events for that week. Let each day's events be noted carefully. Enough ludicrous incidents occur in any school to render the Log Book spicy. Arrange a little badge for the secretary, to add a little dignity to the office. Elect secretary by ballot according to regular usage.

A HISTORY GAME. Additional interest may be given to the history class by a game of this kind: Let the class choose sides. Let a pupil on one side name an event mentioned in the history, and let the members of the opposing side all write the name of a person prominently connected with the event. Next let a member of the second side name a person mentioned in the history, and let the members of the first side all write an event with which he was prominently connected. Thus let each member of each side pronounce an event or a name. Change work, by allowing one side to correct the work of the other, determine averages and ascertain which side wins. For example the following were given:

FIRST SIDE.	SECOND SIDE.
Battle of Monmouth.	De Soto.
Invention of sewing machine.	Miles Standish.
Missouri Compromise.	Robert Morris.
Invention of Monitor.	Phil. Sheridan.
Battle above the clouds.	Eliza Lucas.
Discovery of gold in California.	Schoolcraft.
Settlement of Detroit.	Decatur.
The emancipation proclamation.	Santa Anna.
Nullification.	Jos. E. Johnston.
Discovery of St. Lawrence.	Salmon P. Chase.

—*Moderator.*

OUR BOOK TABLE.

THE STUDY OF THE ENGLISH LANGUAGE.

THE ENGLISH LANGUAGE, its Grammar, History, and Literature, by J. M. D. Meiklejohn, (D. C. Heath & Co.; 388 pp.; $1.40.)

The author of this volume is Professor of the Theory, History, and Prac-

tice of Education in the University of St. Andrews, Scotland, and he offers his book as providing "sufficient matter for the four years of study required in England of a pupil-teacher, and also for the first year at his training college." It is of additional interest to us in consequence of this. The four parts of which it consists are grammar, composition, history of the language, and history of the literature, of which the first and the last each make up one third of the volume. The grammar is very concise, and chiefly remarkable for two features: First, it uniformly seeks the explanation of grammatical forms and usages from the history of the language. Take for example the following: "We must be careful to distinguish the article *a* from the broken down preposition *a* in the phrase 'twice a week.' This latter *a* is a fragment of *on;* and the phrase in old English was 'tuwa on Wucan.'" To explain the use of an adjective for an adverb we are told that "in old English adverbs were derived from adjectives by adding *e*. But in course of time the *e* fell off, and an adverb was just like its own adjective. Hence we still have 'He works hard;' 'Run quick!" etc." How lamentably lacking our common grammars are in this kind of historical explanation need not be pointed out. The other point referred to is the great attention given to the derivation of words. One third of the treatise on grammar is devoted to this subject. Apart from this topic 100 pages comprise the principles of grammar and analysis—a brief, judicious and admirable treatise. The sketch of the history of the language is also very concise and excellent. It treats of the relations of the language, the periods of its growth, the history of its vocabulary and of its grammar with specimens, and modern English. This is no child's play, but accurate, rich in illustrations and supposing considerable general culture on the part of the pupil. It constitutes a good basis for a real knowledge of the English tongue. The sketch of literature is the least satisfactory part of the volume, lacking breadth and unity. The book presents a vigorous and effective plan for the study of English, and it is to be hoped will influence the practices of our schools in this subject.

INSTITUTES OF HISTORY.

BRIEF INSTITUTES OF GENERAL HISTORY, by E. B. Andrews, (Silver, Rogers & Co., Boston; 452 pp.; $2.00.)

The plan of Prof. Andrews' book is unique. It is not a history but the institutes of history. He says: "The work does not offer matter for rote recitation in the old fashion, but blazes through the jungle of the ages a course along which the instructor can guide his class much as he lists." The general subject of a chapter is divided into sections, in each of which some topic of it is briefly summarized in a suggesttive way. The treatment is general and philosophical rather than narrative. It "blazes" a certain section of the path. Around this are accumulated various helps. The chapter is introduced with a bibliography of the subject, designed to inform the student what are the best and most accessible modern works treating of it. Each section also has brief

CIPHERING MATCH. A ciphering match is a pr[illegible] illustrative, critical, biblio- afternoon exercise for country schools. The [illegible] text connected with them by time spelling match. Captains choose th[illegible] correct idea of the amount and one from each side—pass to the boar[illegible] the reader. The purpose of the for instance, "Multiply by 25—D[illegible] himself. It is to him an indicator of —Interest, rate 8 per cent., e[illegible] understand and a guide to the chief sources secure the correct result f[illegible] The unity of the book is complete. It is man from his side tak[illegible] but is "to history what the spinal cord is to the the champion. T[illegible] to the Atlantic." It is an indication of the tical arithmetic [illegible] of historical instruction which is, we may say, A SCHOO[illegible] in our higher institutions. The spirit of sceince has prevailed. In this time, an[illegible] the student must now be an investigator. He must no longer learn suitab[illegible] dry compendiums, but go to the living fountains of history and see and judge keer[illegible] for himself.—The book is handsomely printed and bound, and will prove a ev[illegible] valuable aid to all students and readers of history. r

—INDUSTRIAL EDUCATION, by Samuel G. Love, (E. L. Kellogg & Co.; 328 pp.; $1.75), differs from most of the books on this subject, in that it gives in detail the experience of the author, who is superintendent of schools in Jamestown, N. Y., in introducing industrial training into the public schools, and the plans and devices approved by him as the result of twelve years of thought and experiment. Prof. Love tells us how he introduced manual training at first with such funds only as the pupils could raise, and how the work steadily expanded, until it included not only occupations for the primary schools, but a quite extensive course for boys and girls in the grammar and high schools. His plans included sewing, knitting, cutting, embroidery and cooking on the one hand, and on the other wood-work of many kinds, designing, and printing. A practical teacher will learn from the book just how the work was planned and carried out, even to the details of the several lessons. The book seems to us to do more for the practical introduction of manual training into the schools than any other treatise which has fallen under our notice.

—THE TEACHING FACTS OF ENGLISH HISTORY, by D. H. Montgomery, (Ginn & Co.; 415 pp.; $1.25), a most excellent book in the first edition,—has now been thoroughly revised by the author, and considerably expanded, while maps and notes have been added farther to increase its usefulness. The swift, succinct narrative characteristic of the former edition, has been impeded a trifle in this by the greater mass of facts embodied. But the author has the art of effective narration. Brief as his work is it is no dry compendium. He has an eye for the salient facts, a sense of their right relations, and a forceful and vivid way of treating them which makes his book very interesting reading. It seems to us by far the best brief sketch of English history with which we are familiar, and we heartily commend it as a text-book for public schools.

—THE ELEMENTS OF POLITICAL ECONOMY, with some Applications to the

Questions of the Day, by J Laurence Laughlin forms the last issue in Appleton's Science Text Books, (D. Appleton & Co.; 363 pp.) The author has aimed to present in a plain and simple form the elementary principles of this science. He devotes the first part of his book, about two thirds of it, to this purpose. The remainder he calls descriptive political economy which is an attempt to apply the principles developed in the first part to some of the most important problems of the day, socialism, taxation, protection, bimetalism, and so on. He has no sympathy with the view that polotical economy is inhuman and pitiless, "On the contrary," he says, "it seems clear that the fundamental principles of economics are, when ultimately analyzed, but expressions of Christian truth." He has made a very teachable book, and one well adapted to open up the subject to intelligent youths.

—A. S. Barnes & Co. have issued a new and revised edition of Dorman Steele's POPULAR CHEMISTRY (329 pp.) The book in enlarged somewhat, improved in its print and general appearance, and enriched by many additonal illustrations.

—SONGS OF HISTORY, by Hezekia Butterworth, (New England Publishing Co.; 183 pp.; $1.00), contains fifty or more ballads or poems, relating, for the most part, to romantic incidents of American history. They are well adapted to interest children, as a writer for whom the author, editor of the *Youth's Companion* and author of the "Zigzag Journeys" has attained remarkable success. Such subjects as Ponce de Leon, De Soto, In Tampa Bay, The Fire Dance, and Roger Williams, not to name others, lend themselves readily to poetic treatment, and the author's treatment is simple and his verse musical, so that his book is a pleasant companion, and well fitted to increase the interest of young folks in their country's history.

—HOMER'S ILIAD, Books I.—III., edited by Prof. Seymour, of Yale College, (Ginn & Co,; 235 pp.; $1.35), is a very attractive and well edited volume. The notes are quite full and well adapted to the wants of young students, and are placed at the bottom of the page on which the text is found, while much additional information, chiefly critical notes, is added as an appendix at the close of the volume. The illustrations of the text drawn from the Old Testament, Virgil and Milton are a valuable feature.

—EARLY AND INFANT EDUCATION, by James Currie, (E. L. Kellogg & Co.; 300 pp.; $1.25), is a reprint of a well-known and valuable English book. Its author is principal of the Church of Scotland Training School for Teachers, and author of several books on education. The first part is devoted to a statement, based on psychology, of the principles of early education. This is followed by a practical discussion of the subjects of instruction in the infant school, of class management and of school organization. The notes and illustrations at the close of the volume are very suggestive and valuable, and we regret to miss from it the collection of infant school songs which closes the English edition. Mr. Currie's book is eminently practical and conservative, and may safely be

recommended to young primary teachers who wish to study both the theory and practice of their art. The book is very attractively printed.

—C. W. Bardeen, Syracuse, N. Y., issues Bugbee's EXERCISES IN ENGLISH SYNTAX, a helpful book. The author in his preface displays the orthodox horror of exercises in false syntax.

—C. W. Bardeen also sends us specimen pages of a new edition of THE ORBIS PICTUS of Comenius. We rejoice that this interesting primer of the 17th century is to be placed within reach of American students.

—MCGUFFEY'S ALTERNATE READERS, First to Fourth, (Van Antwerp, Bragg & Co.), present fresh and interesting selections adapted to be used as supplementary to any other series, and are beautifully printed and illustrated. They are model school reading books, carefully graded, provided with admirable hints for language lessons, brief biographical sketches of authors, definitions, and other helps.

—THIRD NATURAL HISTORY READER, by Rev. J. G. Wood, (Boston School Supply Co.), is a very attractive volume about the common domestic animals and some of their wild relations, adapted not only to interest, but also to instruct young readers, whom it will teach to observe and think. The illustrations are excellent.

—In the RIVERSIDE LITERATURE SERIES (Houghton, Mifflin & Co., Boston.) an admirable set of books for supplementary reading which are furnished at 15 cents each. We have received *Little Daffy-down-dilly and other Stories*, by Nathaniel Hawthorne. The stories—Daffy-down-dilly, Little Annie's Ramble, The Snow Image, A Rill from the Town Pump, and David Swan, are prefaced with a brief sketch of the author's life. What a perfect treasure such a book is to a child of ten years of age! and to use it in school is to make him enjoy his work. Not inferior is *Birds and Bees*, by John Burroughs, four delightful essays full of the out-of-doors spirit, and of information to delight and benefit a boy. We are not surprised when Miss Burt tells us in her introduction that the pupils in her school "have expressed an enthusiastic interest for the essays in this volume." Different is *American Authors and their Birthdays*, a series of programs and suggestions for the celebrations of the birthdays of American authors, and a record of four years' work in the study of American authors as pursued in the high school at Worcester, Mass., prepared by Alfred S. Roe, principal of the school.

NEWS AND NOTES.

—State Superintendent Thayer has appointed the following visiting committees to the State Normal Schools for the present year: *Platteville:* S. D. Pulford, Lancaster; C. E. Wiswall, Prairie du Sac; William Hooper, East Troy. *Oshkosh:* Michael Kirwan, Manitowoc; Mrs. Mary DeLong, Menasha; A. W. Millard, Markesan. *Whitewater:* Judson Titsworth, Milwaukee; Geo. S.

Parker, Janesville; J. T. Flavin, Watertown. *River Falls:* J. F. Dudley, Eau Claire; J. C. Bartholf, Milton; W. L. Cummings, Trempealeau. *Milwaukee:* Prof. J. C. Freeman, Madison; I. N. Mitchell, Fond du Lac; Charles L. Harper, Lancaster.

— A conference of the regular institute conductors with the State institute committee is called by a circular from the State Superintendent, to meet at his office in Madison on Thursday, Friday and Saturday, Nov. 3 to 5. At this conference it is proposed to discuss freely the defects in the present system and methods of Teachers' Institutes, especially as related to their interest and usefulness to teachers, and the increase and improvement of public school sentiment in the community; and also what changes are practicable and desirable in our plans and methods of institute work

— A circular letter to the town treasurers has been issued from the office of the State Superintendent, asking information whether the money indicated in the school library law has been withheld and expended in the purchase of books. The letter says in conclusion: "The necessity for providing interesting and instructive reading for the children in our public schools seems to me so imperative, that you will pardon me for calling attention once more to the library law. I feel that its value cannot be overestimated, and that it merits the attention of all those who have the interests of the public schools at heart. I sincerely hope that those who are entrusted with the execution of the law will give it their hearty support, and that another year will witness a general compliance with this important legislative enactment."

— Of the exhibit from the State University at the Milwaukee Exposition the *Ægis* says: "The articles on exhibition are chiefly from the mechanical engineering department and largely represent the handiwork of last year's class, though quite a number of the articles are the work of the present seniors, juniors and sophomores. Among the inventions represented are several models showing how rotary may be transformed into rectilinear motion, also a model of a new kind of water-wheel in active operation, and a large number of drawings of different kinds of lathes, planers and other machinery too numerous to mention. Draftings of cantilever and other kinds of bridges are also on exhibition, and a large number of fancy articles, turned on the wood lathes by the students. On one of the walls of the booth is a printed statement showing the university income and its apportionment on the various buildings, library, physical and mechanical apparatus, etc. The number of professors constituting the faculty and the number of students as taken from last year's catalogne is also given, besides the names and places of residence of the different regents."

— The thirty-sixth semi-annual session of the Sauk county educational association is to be held at Reedsburg, Nov. 26. One of its features will be the Sauk county school exhibit, which attracted much attention at Chicago.

— The supply of the maps of Wisconsin by Nicodemus and Conover, which by a law of 1879 the State Superintendent was authorized to purchase and sell to school officers and districts at $2.00 per copy, has been completely exhausted. It is, therefore, useless for school officers to order them as they cannot be furnished, nor is the Superintendent authorized to obtain or furnish any others. Letters containing orders for these maps are still frequently received,

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and trouble and disappointment can be avoided by taking note of the fact that the State Superintendent cannot now supply maps of the State of any sort to schools or school officers. It is to be regretted that the excellent railroad map of the State, issued in the report of the State Railroad Commissioner, is not placed on the market at cheap figures, as it readily can be, and thus made available for district schools which have failed to secure the other. We hope that a movement to secure this result will be set on foot. It ought to be possible to furnish this substantially mounted at a price not exceeding fifty cents, and it will serve the purposes of the schools excellently.

—One phase of the "Institute Problem" is shown by the following extracts from the remarks of Supt. John Nagle, of Manitowoc county, in a late number of the *Pilot*. "There are 143 teachers in the county. Of that number, 74 attended the institute for this year. The entire enrollment was 104 and 30 of these have never taught. The average attendance per day was only 78, showing an irregularity of attendance which would be startling in the worst country school in the county. The average number of days attended by each member is only a little over 3½. Of the 104 enrolled, only 25 attended the entire five days. There are teachers in this county who have never been present an hour at an institute. There is much talk of poor schools, but many school boards will not extend a bit of aid to make them better. No person should be employed as a teacher who has not spent some time at a normal school or at at an institute. But there are perhaps not ten school officers in the county who ask any questions of applicants to learn what degree of interest is taken in school work, and the result is that only those who are urged on by their own ambition, seek to improve themselves. The average daily attendance shows another defect,—teachers' enrolling without any purpose of being present for any longer time than is sufficient to warrant being classed as members. The work done at these institutes is of such a character that attendance of the members must be continuous in order that they derive the full benefit. But when only 17 out of 143 show a dispostion to profit to the fullest extent by these schools, it is only natural an inquiry should be made as to the cause. Schools are organized not to furnish employment to the teacher, but to give instruction to the children, and the teacher who does not put himself in line with the best thought in matters pertaining to his calling, should find it difficult to get employment. But he does not. He finds time to canvass the county to secure a school but not a minute toward fitting himself to do the work in that school which he ought. Many insist they can get no good from the institute. When a person reaches that stage that he is beyond instruction his ability will warrant his seeking a more remunerative position than that of teacher in a mixed school. It is passing strange how the leading educators of the state should show such little judgment as to provide for teachers' institutes when the backwoods teacher finds they are no good; and it is strange that those teachers making the most rapid advancement and securing constant promotion, find the institute a most excellent school. Strange, but true."

—The State Normal School at Milwaukee opens with a larger enrollment than it had last year. The Senior class is large and strong enough to give fair promise of more than twenty graduates this year. The enrollment shows a marked increase in the number of high

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schools represented, there being now students from thirteen different high schools of this State in the Normal classes. Miss Mary E. Sykes, of the Syracuse, N. Y., City Normal School, has been appointed Training Teacher, vice Miss Mary Cate resigned. The vacancy caused by the resignation of Miss Campbell was filled by the appointment of Miss Winifred Jones, lately a teacher in one of the primary schools of Milwaukee.

— Prof. W. H. Payne, of Ann Arbor, has accepted the presidency of the Tennessee Normal University, for which he leaves the chair of pedagogy in the State University.

— Prescott has dedicated during the past month a fine new high school building, perfect in all its appointments, erected at an expense of twenty thousand dollars.

— The calls for the JOURNAL of September last have exhausted our supply. We will pay ten cents a piece for all sent to us during November.

— Mrs. Dr. Bingham, of Milwaukee, is giving a series of lectures on hygiene before the pupils of the State Normal School at Whitewater.

— A considerable increase is observable in the grammar grades of the public schools in Janesville, believed to be due in part at least to a readjustment of the schools by which both sides of the city are now provided with a school of this grade.

— Teachers ought to interest themselves in securing for the schools of which they have charge the advantages to which these are entitled under the School Library law passed at the last session of the legislature. Indifference and inaction may result in the loss to your district of an instrumentality of the very highest value to its school. The success of the measure will depend upon an intelligent public sentiment on the subject, and teachers can and ought to help to create such a sentiment. It is easy to make apparent the source of wholesome pleasure and instruction which these libraries will place within the reach of the families of the district, and the right to them which is created by the law. If this is done the people of the district will see to it that they have the advantage to which they are entitled.

— In the Wisconsin exhibit at Chicago, Prof. King's Relief Maps attracted much attention. There were four of them, a map of the World, on Mercator's projection; a map of the United States; a map of Wisconsin; and a map of the Yellowstone National Park. They have been constructed with very great care and accuracy, from the latest available sources of information, and present clearly to the eye the relief features of the regions treated. The map which was exhibited at Madison when the National association met there, will be remembered by many teachers. That is not included in the present series, in which the vertical scale, though of course much larger than the horizontal, is not so much larger as in that map. It is only necessary to glance at these maps to appreciate their value as aids in teaching but an extended study of them would be necessary to reveal the number of interesting facts which they bring to view. In the map of the world, for example, the Atlantic basin, which is constructed from a bothymetrical map accompanying the Challenger report, sets forth clearly to the eye the ridge of slight depression fringing the continents, the immense hollows of the deep seas, the plateaus of lesser depth, and the islands as mountains or ranges towering up above the water level. We understand that Prof. King is now prepared to furnish casts of these relief maps, securely mounted in oak frames, at very moderate terms, and we know of no more valuable aid for the proper teaching of geography.

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ELEMENTARY EDUCATION.

Activity characterizes mental as well as physical growth. It is a mark of the highest civilizations. Hallam ventured the assertion that the intellectual energies of mankind can never remain stationary, and adds, "a nation that ceases to produce original and inventive minds born to advance the landmarks of knowledge or skill will recede from step to step till it loses even the secondary merits of imitation and industry." Education being so closely allied to national progress, any tendency to stagnation in its condition betokens consequences of the most serious nature. For this reason, possibly, the best friends of national growth find their mission in keeping the educational waters agitated. Many others step in at the opportune moment and are benefited by the agitation. That this is true, illustrates differences of individual traits rather than reflects upon the potency of the results. The magnanimous spirit desires the greatest good to the greatest number, the widest dissemination of the curative properties among all classes. What we shrink from and desire to shun is quackery and false doctrine in education, not earnestness of inquiry and thoughtful activity. We all recognize some of the points we have gained in the experience of the past, and that which has upon it the stamp of utility and reason we desire to cherish as a part of our heritage from a well-meaning and truth-seeking ancestry. But with no less pertinacity must we press steadily forward towards better things, increasing the range and value of our intellectual estates. We have not been inactive in the years just gone. All in all the last two decades mark more positive progress towards a sound system of education than the ten preceding decades. The whole

intellectual life of Europe and America has been infused with a fresh, vigorous, and healthful spirit under the influence of scientific inquiry and invention. Education has responded in some degree, but must and will be even more responsive in the immediate future, for this influence is acquiring daily greater power from the force of its own momentum. The average citizen engrossed with paying taxes, building school houses, and assisting to the extent of his ability and leisure in organizing a complete school system, has given little thought to the conditions of internal progress, and to the evolution of educational principles. The external signs in tangible forms have impressed some, but the spirit towards which we strive and the philosophy that is certainly assuming definite proportions is of more practical and enduring worth than the mere symbols which the multitudes have in all ages of history worshipped. The great mission of the best educators of the day is, first, to lead the members of the profession of teaching to an accurate conception of the true spirit of the teacher and the significance of what has already been gained: secondly, to utilize the general intellectual activity of the times to uplift the profession and place it in a position of influence and honor.

To aid in the attainment of these desirable ends let us consider how weak we are, notwithstanding the general spirit of activity, in observing the principles already established, and how much unprogressiveness there is due to that "force of inertia" which it has been said "makes it so difficult for the human mind to free itself from the influence of long acquired habit, and leave the beaten path of familiar routine."

"*No matter should be used that is not adapted to the age and development of the child*" is one of the recognized fundamental principles of modern education. The experience of the many has confirmed the statements of the wise and in *theory* this truth has been accepted. It has been emphasized by the authority of pychologists and of great educationists; it has been printed in italics in educational journals, and discussed in educational gatherings until those who listen and read have been led to mental acceptance. But it has only found a place to rest quietly in the memory chamber of many minds without disturbing their mental activity, or leading to change of life in teaching. Many a discouraged teacher, comprehending and applying this principle, would find in it the secret of success. How much of the failure of our present school system is due to its violation, methinks it would try Atkinson's statistical power to determine. Think how much of our courses

of study have been constructed on the old ideas of education, mediæval or Puritanic, without consideration of the age or development of the child. A course of study for the elementary schools, extending through the formative period of a child's life, and embracing all that shall meet the physical, mental, and moral requirements of his nature in accordance with the laws of body and of mind, is scarcely less than a work of art if so perfectly formed as to be suited to the symmetrical development of the average child. Remember also that but few of the thousands of teachers in the country have ever studied the laws of mental growth, and that examinations for teachers' certificates still emphasize everything else more than that which indicates ability to teach, and what wonder is it that the work of the schools is lamentably inefficient, not to say injurious, in many localities.

Another principle that has become a part of our educational doctrine is that the *first years of life are occupied by the child largely in gaining presentative knowledge*—the material for representative and thought knowledge. No one acquainted with the laws of mental growth will gainsay this. That which made the educated young men of the sixteenth century so "awkward and maladroit" in the eyes of Montaigne was the lack of such training as this principle emphasizes. Over two centuries of discussion and half a century of effort in introducing adequate sense-training have failed to give us the proper recognition of the importance of this subject in the courses of study planned for our children. Dr. White says, and says wisely, "Children may be kept swinging on the gate of sense when they are fully prepared to make easy and fruitful excursions into the garden of thought." We venture to assert that if permitted to swing on the gate of sense they will certainly steal off very often into the "garden of thought." By the judicious guidance of the teacher the child will be directed constantly to the fruits and flowers in the garden. I doubt not that Dr. White has found in Cincinnati, as many of us have in Wisconsin, that the child rarely "swings on the gate" at the time he needs it most, and so enters the thought-field with less pleasure and profit than if he had done so. Confused notions of numbers, imperfect ideas concerning the meanings of words, loose thinking and stammering utterance could be and ought to be corrected by following tenaciously and systematically this well-established law of all mental development. As a natural and logical result we should have *all* subjects taught in the early periods of instruction by

means of easy appeals to the senses. Education must be based on the learner's observation, on his personal experience, for we are aiming at the development of his powers. "If," as Comenius said, "the superstructure is not to totter, the foundation must be laid well."

When this is done in an intelligent way, drawing will not be a fruitless exercise as it has been to a large degree in the past, and geography will prove an attractive subject rather than a dreaded exercise as it is even to-day in many schools. Why we should utterly disregard the line of least resistance in our work in primary education and ignore the principles already gained and accepted is a mystery. It illustrates well the influence of heredity and the dogged conservatism of the pedagogue that we still insist so generally on following the old regime,—we *do* counter to our theories and better judgment.

Since correct judging and reasoning are based on clearness of conception, *the period when the child's mind is engaged in gaining the materials for clear concepts is the most important in his life.* Some one has said "conceiving is strongest at six, reasoning at sixteen." All practical, observing teachers know that the main work of the schools in this country must be done before the average child reaches fourteen. Parents, business men, boards of education, and even teachers, now cry out, "give us a practical education that will fit the boy for usefulness at fourteen." Few realize that whether the decision at fourteen be in favor of gaining a livelihood at that time or of continuing a course of study in higher schools, the intellectual reasons are just as strong in favor of a system of careful sense-training in the one case as in the other. The clear thinking and true living which we all hope to see sometime as a result of our efforts in education, must come, if they come at all, as the outcome of patient, painstaking work of the teacher in awakening and developing properly the faculties of perception and conception. Regarded from this standpoint there can be no question concerning the value and importance of forming proper notions of form, sound, color, qualities of matter, etc., in our primary schools. It must be apparent at the same time that much energy is wasted if a child is taxed greatly before the age of fourteen with difficult arithmetical problems which exist and are used only for severe mental gymnastic in reasoning. A course of study that makes such demands, violates physiological, psychological, and pedagogical laws, and the teacher that insists upon exacting such exercises at such an age shows ignorance, or sinful neglect

of the fundamental doctrines of the profession. Not that I would leave the reasoning powers untested, fallow, but that I would have them judiciously treated. Prof. Howison says in writing of such problems: "It is not that this class of exercises to which you refer are in kind and of necessity wrong, but that the complexity and difficulty of those actually given are so often out of all proportion to the healthy capacity of children at the age involved." Bain says: "For the large majority the solution of problems is not the highest end. Mathematics does not touch us how to observe, how to generalize, how to classify. It does not teach the art of defining by the examination of individual things." Arithmetic absorbs too much of the life and energy of our children in the elementary schools, considering the results obtained and the other important work neglected.

Another principle that we need to be reminded of constantly, is that *the mind, as the body, gains power by activity.* It has been accepted certainly, since the time of Froebel, that the activity that has most spontaneity about it is productive of the best results. Apprehend this fact, apply it judiciously in the work of the schools, drudgery and repression will be banished; the humanizing will quickly enter. The picture of masses of children doing the assigned tasks without the enthusiasm of personal investigation and discovery will be witnessed no longer. However well such a system as is in vogue in some of our large schools may show the results of discipline in the automatic, unenthusiastic movements of the children physically and mentally, they do not suggest the best mental guidance, nor the most elevating educational influences. All military movements and drill, while in a measure commendable for discipline, have their limitations for culture. The ideal manhood cannot be reached by that kind of appeal only. The rigorous imposition of the teacher's authority narrows the child's personality by repressing the life-giving element of spontaneity. The child soon becomes a machine in thought as in action. It is not only unnatural and cruel but un-American to crush the germ of independent thinking by such systems, wherever practised. The teacher, above all others, must be human. He should teach the dual nature in the child, the human and the divine. Make the child a creator by placing clay in his hands and allowing him free scope for imagination while using it. Lead him to love work for the pleasure of accomplishing. Encourage personal description of events and of experiences in which he has been a participant. Thus memory

grows, imagination unfolds and the power of expression keeps pace with the knowledge-power acquired. If there were the recognition there should be of the importance of elementary science teaching in our schools, there would be as a result a mental chase that would be a revelation to many teachers. To what kind of knowledge does the mind turn more readily than to the phenomena of life that touch it on every side from the beginning with magnetic power, saying, "Let there be light."

The medium of communicating knowledge from mind to mind is language, but *language is meaningless unless the mind has clear concepts corresponding to the words used.*

We have abundant illustration daily of the weakness, amounting almost to inability, in the use of the language of our country. From Stanley Hall's tests of general information, from English as She is Taught, down to our own daily experience, we find confirmed the impression that our children are limited in their vocabulary, are wanting in intelligent use of the words they employ. We firmly believe that careful exercise of the senses in forming correct notions would greatly aid in overcoming this difficulty. "In order that the meaning of words heard or read may be *realized*, it is necessary to form distinct mental images of the objects described or the events narrated," says Sully. Unless the imagination clothe the word with living thought, it is vague and insignificant. No description of Waterloo from Hugo's Heaven-tipped pen, nor of Raphæl's matchless conception has any significance unless there comes on the wings of imagination a suggestion of the thought the words convey. Even then the strongest imagination will not interpret the truest description so that it will actually correspond to the original. Yet we trust to a child's vague impressions of realities, received for the most part without proper guidance of parent or teacher, for accurate images of what he reads or hears read. If we had more intelligent reading and observation, it is my humble judgment that we should have work infinitely superior to anything we now have in language. To gain this I would associate this reading and this writing, early and late, with actual experiences with things in the study of geography and natural science. It is too much to ask of mortals to create something out of nothing. The materials that the mind uses in constructing new images, in originating productions, must have come from the actualities that impinged on the mind's activity. If, when

these materials are brought together, correct words are used to represent these ideas, a foundation is laid for correct and natural use of language later.

I admit that the inheritance of the English hearing and speaking boy with all his associations and opportunities, and that of the boy of German or Scandinavian extraction with his, has made a wide difference in their power to learn English readily. But the principle is not changed by that fact. Whatever the inheritance may be, the manner of proceeding is not changed or affected by that. For an Eastern or Western lad, native or foreign born, son of college president or of puddler, the way to effective and accurate discourse is the same, *via* accurate and clear percepts and concepts formed as far as possible by actual experiences with the concrete. Follow, or accompany, this with "action, action, action," in the use of language. Within a year it has been my lot to see young children in two cities engaged in giving definitions of grammatical terms. They detested the study and showed incompetence in the oral and written expression of thought. With all the opportunities the teacher has to teach language before technical grammar should be touched at all, these results reflect severely upon our plans and upon our methods of teaching. The principal of a large city school made no insignificant boast when he stated that he had prepared two boys of German parentage for the high school who could excel the most of their American classmates in correct and elegant use of the English language in writing.

Question an intelligent lawyer upon a legal point, and he will trace the history of authorities through statute to the common law of England, maybe to the Pandects or Institutes of Quintilian. Many lawyers there are, in truth, who practice without knowledge of Quintilian, but most, if not all, have made at least a feint at the study of English Common Law. In every case the trial is before a judge able to interpret, one who restrains the pleader and holds him to the requirements of the constitution or statute. But the teacher unfortunately is a law unto himself. These principles of education that have been announced in different forms, with varying emphasis but with the same fundamental thought, for two centuries ought now to be followed in practice. But if, as must be the case in every profession that is but just establishing a code, the general practitioners are weak in doctrine and in practice, then city superintendents and principals at least should be qualified to interpret princi-

ples and illustrate their practice. Since fifty per cent. of our children never reach the grammar grades, the importance of intelligent plans of work, and of the most thorough and pains-taking execution of them in the primary grades is too patent to be discussed. That the average child under the average teacher should spend from one to two years reading a single first reader, whatever may be said of thoroughness, is absurd waste of time and energy. Within that time he can and should read from six to ten such books and much more matter besides. Twenty years ago, Laurie compressed the directions for reading into four sentences, which I will further condense and state as follows: 1. Reading must be graduated in difficulty as mere reading lessons. 2. The lessons must be various as the child's experiences giving these shape and development. 3. *They must be abundant in respect of quantity.* 4. The subjects treated and the style of treating them must be graduated in accordance with the growth of mind, if the reading is to be intelligent and intelligible. If these directions were followed we could have intelligent reading before the fifty per cent. leave the schools. Moreover it should be a constant effort to furnish the mind with food to start and sustain mental activity. To confine the children, as is done, to one reader, or one set of books, is unnatural. The appetite for knowledge is not met. The boys and girls have had little more than saw-dust all day, and go home hungry at night. We all know that not all filling is feeding. Here is where geography and elementary science, when properly taught, open to the child a field rich in verdure, flowers and vernal beauty. With tray of wet sand, drawing material, wall-map, blackboard, the section of country studied begins to bloom as a rose, and the child's imagination kindled by the torch of the teacher's enthusiasm plays about his lines and the sand until he sees pictures that become living realities to him. The rain falls, the rivers form and flow, the soil becomes fertile, fruits and productions,—results of climate and soil—spring forth; commerce is awakened, and populous cities rise and flourish. What a fascinating study! Here is spontaneous activity, and a mind filling with meat to sustain and nourish it, instead of with chaff of populations of cities, lengths of rivers and names of innumerable cities. Geography's place in the course of study with five continuous years of text-book work as seen in schools not far from Wisconsin, and in some schools in Wisconsin, is seriously to be questioned, either from the practical or culture side. It would be safe to limit its time to two years in

the grammar school, or leave it out altogether for all the lasting benefits that come from such instruction. But when instead of this fruitless system we see the teacher aglow with enthusiasm for her subject, moulding board near by; using her skill and stimulating that of pupils in drawing; pictures and maps and guide books, productions and curiosities illustrating physical and social conditions of the people at hand, and she in the midst of enthusiastic discoverers as full of purpose and energy as ever Columbus in his best days, what a contrast, and what results! They begin to go from this center into literature, history, travel, sociology, science. Geography, mastered gives the key to all these studies, and yet no branch has been more underestimated, none more abused. The English have discovered its significance and have recently honored it as a study with a place in their great universities of Oxford and Cambridge. Lectureships have been established for the study of the "Science of Geography," "to show its relationship to history, archæology, biology, geology and pedagogy."

For the reason that our American education is so largely practical, utilitarian, and our thought and customs are likely to make it even more so than it has been, I would throw into it more of the human element that Matthew Arnold recognized and lauded so in the German system. In what we have said concerning geography and reading as taught even now in many schools it is plain that there is need of reform there. In language and history there are possibilities which if we realize we are still unable to reach. Words are still soulless things to most teachers; they are disembodied spirits; and language is a medium still to disguise thought.

I hope I have not said so much that you have not been able to seize the points most important in my thought. To follow our well established educational principles; to throw more intelligence, enthusiasm, and power into all our work; but above all to introduce into our work more accuracy of observation by means of proper study of things in the primary grades, would enable us to send out the great masses of children who leave us at twelve years of age better equipped for citizenship than they are now; would lay a more solid and abiding foundation for the work of high school and college; would, I heartily believe, lead us all towards the ideal symmetrical education we are all desirous of furnishing the children of this generation.

J. J. Mapel.

MILWAUKEE, July 6, 1887.

NOTE.— Readers of the above are directed to an interesting article on Geography in the December number of *Popular Science Monthly.*

ARE ERRORS IN TEXT-BOOKS AN UNMIXED EVIL?

Reliance upon authority is a characteristic of youth. The teacher's dictum or that of the text-book is so likely to be accepted as a finality that it may quench the spirit of investigation and so retard intellectual growth. But a large part of the child's instruction in the first few years of school work must come to him simply in the form of arbitrary facts announced by the voice of authority. It is highly important, therefore, that while the child is in this fact-learning period what is presented should be true and accurate. Is is true his wits may be sharpened by placing before him judiciously selected matter containing errors and discrepancies to be corrected or removed, but unless he be warned beforehand of the natural disposition of the immature mind to accept facts on authority may defeat the teacher's purpose.

But, after the years of childhood, there comes a period when reason and individual judgment begin to assert themselves even in opposition to authority. Before reaching the middle of the high school course, the pupil who has been well trained in the exercise of his own powers will have developed a sufficient amount of wholesome intellectual skepticism to question and challenge the statements of the text-book and to accept nothing on mere authority which he can easily and certainly determine for himself by experiment or by reasoning. Linguistic and historical studies offer little or no opportunity for the discovery of errors by the student; for at best he can only offset one authority by quoting another. Hence great accuracy is desirable in the text-books used in these branches. In physics and mathematies, however, and to some extent in natural science, erroneous statements, if not too numerous, may be turned to good account. A few wrong answers in an arithmetic give the pupil a chance to enjoy a pleasure which combines the exultation of discovery and victory when he finds the book is wrong and can prove it. And how much more human the author then appears to the learner!

The pupil who is occasionally placed among pitfalls will hardly become so over credulous as to believe all he "sees in print," and will not invest the writers of school books with the attribute of infallebility. Nor do all mistakes need to be pointed out in advance. The skillful teacher may sometimes purposely lead the student into error; for the invigorating exercise of getting up far more than compensates the pain of falling.

The "torpedo's shock" which a healthy student receives when made conscious of ignorance or error is tonic, not paralyzing.

The following selections are taken from text-books in common use; and they are all from good books, better, indeed, than many that contain fewer errors. Most of them belong to the class of mistakes which enhance value of a school book:

"The action of the siphon is due to the inequality of air-pressure on its ends." If so, would not the liquid move toward the higher level?

"Tenacity is a variety of adhesion." Does it hold together like or unlike molecules?

"The intensity of light varies inversely as the square of the illuminated surface." What words should be left out in order to make the statement correct?

"Two constant forces that are unequal will cause a curved motion." Will they?

"In the southern hemisphere the sun casts all midday shadows toward the south." How is it at Cape St. Roque on Christmas day?

"The declination of a star is its meridian distance from the equinoctial, and is equal to the difference between the altitude of the star and of the equinoctial, each taken on the meridian. If the altitude of the star is the greater quantity, the declination is north; if the less, south. Should an observer in Lat. 40° N. apply the above, what would he get as the declination of a star whose polar distance is 10°?

"In the hydrostatic press, the pressure exerted by the pump is increased as many times as the area of a cross-section of the larger cylinder is greater than that of the smaller." Do mathematical writers gain anything by using the expressions "increased as many times" and "times greater than"?

"The depth of a well may be found by dropping a stone into it, and multiplying the number of seconds occupied by the stone in reaching the bottom by the velocity of sound"!!!

The pupil who has in hand a recently published work on elementary physics which presents a figure representing the lowest of several jets issuing from the side of a vessel as having the greatest range will get more training in the exercise of independent thinking by trying the experiment and proving the book wrong than would result from using a faultless text. Perhaps it is well to retain even such expressions as "water rises," "liquids tend to seek their level," "the center of gravity

seeks the lowest point," "heated air rises," "water rushes in to fill the vacuum," etc., for they serve at least one useful purpose. They are the ear-marks of a former age in which our ancestors attributed volition and personality to everything which manifested physical energy; and so, like the words *gas* and *crucible*, they give the student a glimpse of those primitive ideas entertained by the alchemists and old philosophers before men had learned that nothing moves until either pushed or pulled.

Silas Y. Gillan.

STATE NORMAL SCHOOL, MILWAUKEE, WIS., Nov. 7, 1887.

PHYSIOLOGY AS RELATED TO STIMULANTS AND NARCOTICS.

STUDY OF DIOSMOSE AND DIALYSIS.—OBJECTS OF THE LESSON: To teach that: 1. When two liquids, which will mix, or two gases, are separated by a porous septum to which they will adhere, a current is established through the septum in both directions. 2. When the two opposing currents are nearly equal the process is called diosmose. 3. When the flow in one direction is very small compared to the flow in the opposite direction the process is named dialysis. 4. The tissues of plants and animals act as porous septa, and all food is carried to the cells of living beings and all wastes removed from them by the processes of diosmose and dialysis.

Having become familiar with the main facts regarding the gross anatomy of those organs which import food into our bodies, we need next to consider the manner in which the various substances enter the body proper from the alimentary canal and from the lungs; but before we can understand these it becomes necessary to study the physical phenomena of diosmose and dialysis.

All have noticed that when dry sugar is sprinkled over a dish of fresh strawberries, the sugar shortly begins to dissolve and to enter into the strawberries, while there appears in the dish a large quantity of juice. In this case the water, which makes up the large bulk of the strawberry, has passed out, while sugar has entered the berry. But since the berries have each and all become sensibly smaller than they were before they were sweetened, and since there is more juice in the dish than we added sugar, it is evident that more juice must have left the berries than

sugar entered them. So, too, when fresh pork is laid down in salt, a large quantity of water leaves the meat and forms a brine in the barrel, while the salt enters and is distributed through all parts of the meat. In these cases there have been currents moving in opposite directions into and from the strawberries and the meat, and these phenomena have been named diosmose. If we put raisins into a dish of water and leave them for a time the raisins become larger while at the same time the water becomes sweet and flavored with the raisins. In this case also, as in the other two, two currents have been passing through the skin of the raisin, and diosmose has occurred, but the in-going current has been stronger than the out-going one. When we put beans to soak they increase greatly in bulk and weight; very much water enters them while only a small quantity of fluid comes out, thus exhibiting that other phase of diosmose known as dialysis. Corn and other grains swell, in the same manner as beans do, when placed in water, but very little if any of the starch or proteid comes out into the water, because such substances pass very slowly, or not at all, through living tissues; and hence there is provision made in these seeds for changing the starch and proteids into forms which are capable of passing through the cell walls of the growing plantlet by osmotic action, when the time for growth has arrived. We all know that sprouted wheat, and corn, and potatoes too, have a decidedly sweetish taste, and this is due to the fact that the insoluble starch has been transformed by an agent into a kind of sugar, which is capable of passing from cell to cell through the potato or grain and out into the growing sprouts, where it is needed for food; and we know very well that as the sprouts become longer the potatoes become smaller, thus showing that *matter* is changing place in the growing potato, and osmotic action is the method of transfer. This brings us to the necessity for digestive organs as we have found them in the alimentary canal. Since no food can enter the body proper except in the manner we have seen that the sugar enters the strawberry, or salt enters the meat, it follows that it must be in the fluid state and capable of passing readily through the walls of the alimentary canal or of the lungs. Such substances as oxygen, water, and solutions of sugar and salt, are in this condition when we take them into the body cavities; but the starches, the various proteids, and albuminoids, either do not dialyze at all or too slowly to enter the body through the walls of the alimentary canal; and hence, just as we have seen to be the case in the seeds

of plants, there are provisions for changing the starches into sugars, and the proteids and albuminoids into peptones, which do enter the tissues readily by dialysis.

Gases, like liquids, are subject to the laws of diosmose, and it is in this manner that our bodies are supplied with oxygen through the lungs, and freed from carbon dioxide at the same time. We are not familiar with phenomena proving the diosmose of gases, but it is easy to demonstrate the principle by an experiment.

Place in an ink bottle some pieces of sheet zinc, and cover them with water. In a saucer make a thick paste of plaster of paris and water, about ¼ of an inch deep, and in this press the mouth of the bowl of a common clay pipe, allowing it to remain until the plaster sets, then remove the pipe, with the plug of plaster in its mouth, and allow it to become quite dry. Now provide two tumblers, one of which is about a third full of water. Pour sulphuric acid upon the zinc until the hydrogen escapes very rapidly, and hold inverted over the bottle the empty tumbler, so that the hydrogen, which is lighter than the air, may rise into it and crowd the air down and out. When the tumbler is full of hydrogen hold the pipe upright, with its stem in the water of the other tumbler, and carry its bowl *quickly* up into the hydrogen, taking care not to invert the tumbler so as to allow the hydrogen to escape. Diosmose will take place between the air in the pipe and the hydrogen around it, the latter passing in so rapidly as to cause a stream of bubbles to escape from the stem and rise through the water. Some air has, in this experiment, passed from the bowl of the pipe into the hydrogen around it, thus illustrating the method by which the tissues are supplied with oxygen and from carbon dioxide.

A STUDY OF THE NATURE OF DIGESTION.—OBJECTS OF THE LESSON: To teach that: 1. With some substances their digestion consists in simply dissolving them. 2. With other substances their digestion consists in chemically changing and dissolving them. 3. With still other substances their digestion consists in removing them from investing tissues and then dividing them into minute droplets and investing them with a thin film.

As has been stated, water and oxygen require no preparatory changes for their entrance by osmotic action into the body; most other foodstuffs, however, must be digested. The process of digestion consists in three classes of changes: 1. Some substances, like salt, are simply dissolved

by the saliva or other fluids, as they may be in water, and in this case the molecules, which make up the solid bodies, are only separated from one another and made to move singly in the fluid which has dissolved them; these tiny molecules are thus enabled to go one behind another through the cell walls from place to place in the body. 2. Other substances require their molecules to be made over into those of other kinds before the fluids of the body can cause them to move singly, and thus get them out of the alimentary canal and into the body. The old starch molecules, for example, which have been built in the potato, are torn down in the alimentary canal and rebuilt into new sorts of sugar molecules. Drop a piece of marble about half the size of a kernel of wheat into a test tube and cover it with water. No matter how much you shake it about, or how long you wait, the water is not able to dissolve it. Now add a little hydrochloric acid, and immediately bubbles begin to escape, and shortly the bit of marble has disappeared. Its molecules have been made over into two new kinds, one of which escaped into the air as carbon dioxide, while the water has dissolved the other as soon as formed; and if the water be evaporated a white solid will be seen. Changes analogous to those occur when starch and proteid molecules are acted upon by the digestive fluids. 3. The various fats which are eaten are only to a small extent dissolved, but are separated into tiny droplets, and in this condition, in some unexplained manner, find their way into the lacteals. If a little oil be dropped upon the water in a test tube and then violently shaken, the oil will be separated into minute droplets, which, by reflecting light in all directions as fine bubbles do, impart to the water a milky appearance. Left to stand, however, the oil soon gathers at the top again. If now a little white of an egg, or, better still, a little bile, is added and the contents again agitated, the oil will be divided as before, but on being allowed to stand will require a much longer time to collect at the top. In this case, the albumen of the egg gathers in a thin film about each droplet of oil, and as there is a stronger attraction between the water and the albumen than between the oil and the water, a longer time is required for the oil to collect again. The various fats we eat are first freed by digesting off the tissues which may invest them; then they are melted by the heat of the alimentary canal; and finally they are divided into minute spheres, which, by being wrapped in a delcate film, are, in some way, readily drawn into the lacteals. Digestion then consists in simply separating the molecules of some bodies — dis-

solving them,—in making the molecules of other bodies over into new molecules, and dissolving them; and in doing the molecules of still other bodies up in minute spherical packages—emulsifying them.

STUDY OF THE PROCESSES OF DIGESTION AND OF ABSORPTION.—OBJECTS OF THE LESSON: To teach that: 1. The three classes of changes which constitute digestion are produced by five digestive fluids —saliva, gastric juice, bile, pancreatic juice, and the intestinal juices. 2. The flow of the digestive fluids is controlled by nerve centers, which are stimulated by the taste and flavor of the food and by its presence in the canal. 3. The food is thoroughly mixed with the digestive fluids and moved through the alimentary canal by the muscular layers in its walls. 4. Digestion is more rapid, less laborious, and more complete if the food is properly cooked and well masticated. 5. In the walls of the alimentary canal are two extensive sets of tubes—bloodvessels and lymphatics—which carry the digested food away to the heart.

When the food enters the mouth it is, or should be, thoroughly pulverized between the teeth and mixed with the saliva, something over three pounds of which are secreted during the day. The saliva immediately begins to change the starches into sugar, and to dissolve such salts as require no further change to enable them to enter the body. The sugars which may be in the food, those which may be produced by the saliva, and the salts which are dissolved begin to pass at once into the bloodvessels lining the mouth, but as the time is short during which the food is in the mouth, pharynx and œsophagus, only a little absorption occurs before the stomach is reached. When the food, charged with saliva, reaches the stomach it stimulates the nerve centers which control the gastric glands, and they are made to pour out the gastric juice, about 14 lbs. of which are required daily. In the stomach the saliva soon stops its digestion, or acts only slowly, but it acts as a natural stimulant upon the nerves of the stomach, causing the great quantities of gastric juice to be poured out, but when it gets into the intestines it there resumes its work. It is a knowledge of these facts which enables us to see the importance of thoroughly masticating our food, using during the process but little water. Water to moisten the food in the mouth removes one necessity for saliva, and hence it is not poured out as it would otherwise be; and then, we need not retain the food as long in the mouth and for this reason less saliva is mixed with the food. The stomach, therefore, is deprived of the natural stimulant

which causes the gastric juice to flow, and in the intestines there will be less saliva to change the starch, which in bread and potatoes, forms so large a part of our food.

The gastric juice has the power to transform proteids and albuminoids into the soluble and dialyzable peptones; but it has no power over the fats, starches or sugars. The gluten of wheat, the caseine of cheese, the legumen of beans, the greater part of the lean of meat, and the cell walls which surround the fat of meat, are all broken down by the gastric juice more or less completely in the stomach. The phosphates of lime to be found in grain are also changed to calcium chloride. In order that this may be done the circular muscles around the small end of the stomach are kept contracted, so nearly closing the opening leading to the small intestines that only liquids can pass through. During the time the food is in the stomach it is kept moving about by the muscles in its walls. The object of this movement is to bring fresh portions of the food in contact with the walls of the stomach, where the gastric juice may be poured upon it. As the food is dissolved and the gastric juice loses its strength, the spent juice and the digested foods are absorbed into the bloodvessels and lymphatics in the walls of the stomach, or they are forced through into the intestines, where their digestion and absorption continues. Now, just as we may cause the muscles of the jaws to ache by chewing gum, so the stomach, we must remember, is doing, during digestion, two kinds of work, work with its muscles which become fatigued by protracted exercise as other muscles do, and work in the secretion of gastric juice, which is done by the secreting cells lining the tube-shaped gastric glands. Nerve centers, too, must work to keep both the glands and the muscles in action. Now it is the office of the large roomy stomach to see that everything which it is possible to break down into a semi-liquid state, is so broken down before it is allowed to enter the narrow intestines, where it would be difficult for the muscles of that region to move it. This being the case, we may, through carelessness or by eating insufficiently cooked food, greatly and needlessly increase the labor of the stomach.

To illustrate this important fact, take two peppermints of equal size and thoroughly pulverize one of them, placing each in separate glasses containing equal amounts of water. Stir the water in each glass until the candy is dissolved, noticing how much more time is required for the solution of the unpulverized candy. The pulverized sugar, coming in

contact with so much larger quantity of water than in the other case, is dissolved in a much shorter time. When chemical changes are to be produced, the time required to produce them is correspondingly shortened by first dividing the substances as finely as possible. We know very well that with two sticks of wood of equal weight, one reduced to fine shavings while the other is left in a solid block, the one in the finely divided state is burned in a very much shorter time. Now food taken into the stomach in the coarsely divided state must, in the same manner as above, prolong the labor of the stomach, and greatly shorten its needed period for rest. Too rapid eating, then, is evidently a very unwholesome practice.

As the semi-liquid chyme passes by degrees into the intestines its presence there results in stimulating the nerve centers which regulate the action of the liver, pancreas and intestinal glands, and these glands are caused to pour their digestive fluids out upon the food in quantities estimated to amount daily to 3.5, .44 and .46 lbs. respectively, though these estimates are admitted to be very rough approximations to the true amounts. The sour, acid nature of the chyme coming from the stomach is soon changed by the alkaline nature of the new digestive fluids now poured upon the food, and they, together with the unabsorbed saliva, begin their work of completing the transformation of the starches into sugars and of the remaining proteids and albuminoids into peptones, this work being done mainly, if not entirely, by the pancreatic juice, the saliva and the intestinal juices. It is at this stage, too, that the fats are divided into little droplets, or emulsified, preparatory to entering the lacteals. The bile seems to be an important agent in this latter work, while the pancreatic juice also assists. A little of the fats is transformed by the alkalies into a sort of soap, which, being soluble, finds its way into the body in this state.

It is in the intestines that the major part of the absorption of food into the body takes place, and in the small intestines there is a remarkable provision for increasing the amount of mucous membrane which shall come in contact with the food to be absorbed. This provision consists in throwing the mucous membrane into transverse folds which extend out into the liquids to be absorbed. Over the surface of these folds, and other portions as well, is set a vast number of minute projections, called villi, like the pile on velvet. In these thin prolongations, which hang like rootlets in the fluids they are to absorb, are found lacteal

tubes, which are extensions of those we have seen in the peritoneum, and minute bloodvessels also. Extending around the bloodvessels and the lacteal endings are muscular fibers, which, by contraction, force the materials which have dialyzed into these vessels out into the larger trunks. When the muscles again relax the lacteals and bloodvessels expand and then, as there are valves to prevent the return of the materials which have been squeezed out, they are again filled from the alimentary canal. Such, in brief, are the provisions for preparing the food for its entrance into the body through the alimentary canal, and such are the modes and mechanisms for absorbing it. The more than 20 lbs. of digestive fluids which are secreted daily, are, of course, not in the alimentary canal at any one time, nor do they pass out of the body, but are reabsorbed into the circulatory system as soon as they have done their work.

STUDY OF THE PORTAL CIRCULATION.—OBJECTS OF THE LESSON: To teach that: 1. All the blood which is carried away from the alimentary canal below the œsophagus passes through the liver before it again reaches the heart. 2. The object of this circulation is to enable the liver to store up the sugars produced during digestion, and give them out gradually, during the day, as they are needed for the production of energy.

The liver, as we have seen, is the largest gland in the body, and it has a very important office to perform besides that of secreting bile. Too much sugar in the blood produces the disease known as diabetes, during the continuance of which the kidneys remove sugar from the body. To prevent this, the liver is situated where all the sugar produced during digestion must pass through it on its way to the heart; for the sugars are largely taken up by the bloodvessels of the alimentary canal, and these pass through the liver, while the fats are taken up by the lacteals and go into the circulation through the thoracic duct. When the sugars reach the liver they are transformed again into a sort of animal starch, and stored up in its tissues, much as vegetable starch is stored up in potatoes and other plant organs. Gradually, during the day, as the sugar is needed by the body, the animal starch stored up in the liver is again transformed into sugar and sent on its way to the various organs which need it for food. Starch then, which has been taken as food in the morning, is changed first into sugar, so that it may be got out of the alimentary canal by dialysis, then it is reconverted into

animal starch, and held for a time, and then retransformed into soluble sugar, when actually needed by the body.

Insert the following — omitted by the printer — between "just" and "beneath" in 10th line from the bottom, page 502, last number of the JOURNAL: "inside the angles of the lower jaw and the sublingual, situated just."

F. H. King.

RIVER FALLS, WIS.

IN THE LIBRARY.—SCHOOL INSPECTION.—VII.

44. *At what stage Pupil-teachers should begin Collective Teaching.* — Having finished the arithmetic lesson of the fourth-year pupil-teacher, or so much of it as he finds it necessary or desirable to do before going to the geography lesson, the inspector, still accompanied by the principal teacher, passes on to the geography lesson of the third-year pupil-teacher (see § 20). The third year is the year in which the effects of training first begin to be seen most markedly; in which the pupil-teacher begins really to shape; and in which collective lessons can, generally speaking, first be given with any real effect. The schedule to the New Code which defines the qualifications to be required of pupil-teachers during their course of training, does not define at what stage in their apprenticeship they are to begin giving collective lessons. So far as it affords any indication at all on this point, it would seem rather to point to the pupil-teachers not giving such a lesson till their fifth year. This, however, can hardly be the intention of the schedule; and perhaps the explanation of the matter is, that the term "collective lesson" is there used in the sense of "lesson to the whole school" or to a division of the whole school: whereas, I have used the term in the sense in which I believe it is generally used by teachers and managers of elementary schools, viz., that of a lesson in which the instruction is addressed broadly to the whole class, and is not, as in a reading or writing lesson, largely individual. My own practice, when acting as an inspector, was *to require collective lessons in such subjects as geography, grammar, and history, for the first time from pupil-teachers at the end of the third year.* I think that it is a good practice, and I believe that it is not an uncommon rule with inspectors.

45. *Inspection of a Geography Lesson.*— To what, then, does the inspector particularly look when coming to hear the geography lesson of the third-year pupil-teacher? He will, of course, first of all notice *his progress in respect of the elementary laws of teaching.* Having his notes of last year in hand, he will see what improvement he has made in handling a class; how far he has corrected the faults which were noticed last year; whether he keeps his place and controls the scholars with the eye, or moves up and down, or to them, or has any other of the gross faults which I have mentioned in speaking of candidates and pupil teachers of the first two years (see §§ 18, 21). Next he will notice *whether the lesson has been carefully prepared*; and whether the pupil-teacher has the power in a fair degree of attending properly to his class and keeping the scholars active, stimulating them, rousing them when weary, quieting them when boisterous and disorderly, and distributing work evenly among them; and all this while keeping the thread of his lesson in hand, not forgetting the sequence of its parts, and not dwelling too long on the comparatively unimportant parts, or hurrying too quickly over the important parts. He will, of course, observe whether he has improved at all in his diction since last year, or his first year; whether he speaks in an indistinct or hurried way, or uses any vulgarisms, or is at all undignified or trifling. When he is satisfied, which he will be in a very few minutes, on these rudimentary matters, he will pass on to consider *the special value of the lesson, as a lesson in geography.* And just as it is necessary to have some clear notions of what is grammar as taught in our elementary schools, in order to be able to judge properly a lesson in grammar, so it is necessary to have a clear notion of what is geography as taught in our elementary schools, in order to be able to form a good judgment of a geography lesson.

46. *Divisions of the Subject.*— There are two distinct subjects taught in schools under the name of geography. One is the study of those conditions of the earth which are due to nature — its shape and motions, its position in the solar system, and its relations, to the sun, moon, and other members of that system; its climate, and principal atmospheric, and other superficial changes and conditions; the phenomena of its surface, such as seas, mountains, rivers, lakes, and the other natural divisions and formations of land and water; and the like — which is called *physical geography.* The other is the study of those conditions of the earth which are due to its inhabitant man — the division of its

surface into countries; and the subdivisions of these countries; the commercial and political relations of these countries to one another; the localities where men are most aggregated, and the social reasons of such aggregations; the seats of government, industry, learning, and education; the courses and lines of operation of commerce; and the relative progress of the inhabitants of different parts of the world in what we call civilization — which is called *political geography*.

Physical geography comes first of the two, as a study for children, not only because it is more adapted to youthful minds, is less statistical, cultivates thought and reflection more, opens the mind more, and (as an instrument of education) is less apt to degenerate into mere cram; but also because it is impossible to study political geography without some knowledge of physical geography. Children ought not to be taught political geography at all, until they have at least a fair grasp of the rudiments of physical geography, nor to be taught the political geography of a country or county, until they have a good knowledge of its physical geography.

In going, therefore, to inspect this lesson in geography, the inspector will look carefully at the notes handed to him by the pupil-teacher to see whether it would appear that the teacher has a clear appreciation of the difference between these two branches of geography, and whether the lesson deals with one or both of these branches; if both, in what proportions or relations; if one, whether that one is physical or political geography. If, on looking at the notes, he feels any doubt about this, he will, in the interval before mentioned (see § 25), put a question or two to the pupil-teacher, to ascertain whether he has realized how different the two branches are, how differently they require to be handled, and what a different state of preparation they require in the scholars. If he sees that the lesson is wholly or mainly on political geography, he will inquire how far the children are fitted for such a lesson by their previous instruction in physical geography. And, if he is not satisfied on these points, he will, in a subsequent conversation with the principal teacher, point out the importance of making political geography wait upon physical, and will insist on the relative position, in a school course, of these two branches of geography being better observed.

47. *Importance of Home Preparation.*— The next question which he will consider is one of the utmost importance, not only in regard to the

teaching of geography, but also to that of history, and to a certain though less degree, in the teaching also of grammar, in our elementary schools. This question is, *what preparation are the children expected to have made for this lesson by means of home work?* All the mere dry matters of fact which are required to be acquired by the children in a geography or history lesson, should be so acquired by them out of school, in readiness for the lesson. Except the youngest children who cannot be trusted with books out of school, or who cannot read easily enough to study such books, every child should have a little rudimentary book of geography, with coloured maps, a little rudimentary book of history with dates, and a little rudimentary book of English grammar, with analysis of sentences, from which it should be expected to prepare its home lessons; and those very young or very neglected and ignorant children to whom it would be useless to assign home lessons should have less time allotted to them in school for direct instruction, and should be gradually trained to give such spare part of the school time to preparation. It is a deplorable waste of teaching power, and is ruinous both to teachers and taught, to let the teacher's time and vigour be spent in telling the children mere rudimentary facts which they can gain from a penny text-book. In this important matter, as well as in that of marks and place-taking (see § 16), our elementary schools will do well to take a lesson from our secondary schools. No master at Rugby or Marlborough would think of wasting his time, degrading his teaching, and indulging his scholars in neglect and idleness, by occupying his lesson on geography or history with telling them things which they can and should learn from an ordinary and accessible text-book. There the scholars are expected to get up those mere elements out of school, or in special hours of preparation; and the business of the master is one which pre-supposes in his scholars an acquaintance with such rudiments; it is to test, illustrate, amplify, and give interest to such pre-supposed rudimentary knowledge. With every allowance for the difference between a boarding-school and a day-school, and between the domestic circumstances of the rich and of the poor, this is what our elementary schools should likewise aim at. They should do so for the sake of the teacher; because, if his powers are lowered down to the mere delivery of these dry facts, he will have no stimulus to read and improve himself for his scholars; and no chance of throwing over their work the charm of his superior knowledge, or of his

genius. They should do so for the sake of the scholars; because, if they are never practised in learning by themselves they will never learn well at all; and because their time is wasted and their golden opportunities are squandered, when the powers of their teachers are not fully called forth and displayed for their benefit. And they should do so for the sake of the parents; because nothing will carry the civilizing influence of the school more universally into the houses of parents, into our alleys and street doors, than this requirement of home lessons. Day schools, with their home preparation and their place-taking at school, have been the two key-notes of the great and ancient Scottish system of popular education; and in the hands of able and zealous managers, and faithful and judicious teachers, these two principles might be made to play a great part in the cause of popular education in England. The importance of this home-preparation is greater in geography and history than in any other subjects; and the inspector will, therefore, if he does not find it specified in the notes which the pupil-teacher puts into his hands, lose no time in inquiring, "What did you require them to prepare for this lesson?" And if he finds that no preparation has been expected, or that the teacher is wasting his own time and that of the class in telling them things which they either have, or ought to have, prepared, he will speak seriously with the principal teacher, after the inspection, on that matter also.

48. *Use of Blank Maps.*— As a part of this question of home preparation in geography, the inspector will look carefully to see whether the school is well furnished with *blank maps*. It is impossible to overrate the importance of these appliances in an elementary school. In a school in which the geography teaching was really well done, full maps would seldom be used, except in history and reading lessons, and whenever a reference was required to be made. The children, or all those at any rate in the upper half of the school, would be expected to get up their full maps out of school, and would be tested in this knowledge by means of the blank maps in the school. It is an excuse sometimes made for want of such maps, that the teachers are expected to draw their own blank maps, for purposes of instruction, on the black board. This excuse ought not to be accepted. It is very right and proper that pupil-teachers should be able to draw maps, or detached parts of maps, on the black board, for purposes of illustration, &c.; but it is an undue waste of the pupil-teacher's time to require him to draw on the board

every map, from which he is to give a lesson in geography, with all the details which must be required for such a lesson; and it will be found, as a matter of fact, by any active and inquisitive manager, that, where the only blank maps available are those which are drawn by the teachers, more lessons in geography are given without than with a blank map. I have seen in the course of my experience as an inspector, and of the inquiries which I conducted into secondary education for Lord Taunton's Commission, every degree of absurdity result from giving geography lessons without the use of blank maps. The worst absurdity is that which I have witnessed in some girls' school, both secondary and elementary, where the teacher sat before the class with a large map of England, hung up on an easel, and asked the class questions to which they could see the answers in print before their eyes. The teacher herself, wholly unprepared for her lesson, and profoundly ignorant, would nervously scrutinize the map between each question, and then, after an oppressive interval, she would point to a spot on it, in the bottom left-hand corner, and ask "What is that?" The eyes of the front row of girls following the pointer saw the word "Start" in a fine bold print, and their voices repeating it, were caught up in parrot chorus, by the whole class. And this was believed to be a "lesson in geography." A less degree of the same absurdity is still, I fear, common in many schools. A child is selected to point out a place on the map, and is called out in front to do it. With much labour it disentangles itself from the back benches, the whole class watching while it comes round to the front. The pointer is placed in its hand, and it stands before the map searching for the required name. Perhaps it succeeds in finding it. Perhaps not. But whether it succeeds or fails, the process is equally uninstructive. The use of blank maps in a school will at any rate make such mistakes as this on the part of teachers impossible. And, as I have said, no school ought to be without a good supply of them. Every school ought also to have a good terrestrial and a good celestial globe. Frequent reference to the former, and an occasional lesson to the older children on the latter, are most important as a means of making the instruction in geography really cultivating and intelligent.

49. *Geography to be taught with History.— Lessons in Political Geography ought to be connected with History, and illustrated as much as possible by Anecdote.* The great danger of this branch of geography is its tendency to degenerate into mere lifeless, thoughtless cram, or a

mere repertory and catechism of unmeaning names. It is for example very difficult to make English children take an intelligent interest in the political geography of Ireland. But let the teacher who is to teach the geography of Ireland, read for this purpose such works as the account of the Irish campaign in the secound volume of *Oliver Cromwell's Letters and Speeches*, by Mr. Carlyle. Let him master the spirit and main outlines of the story, and then let him teach the political geography of Ireland by way of illustration of the story which he tells the children. So with the geograpphy of any other country. The teacher should endeavour to connect his teaching of it with matters of human and patriotic interest. India should be taught by reference to such stirring events as the life of Lord Clive and the Sepoy Mutiny; Spain by reference to the Peninsular War; Australia by unfolding the story of its gradual settlement and colonization; and all parts of England by reference to English history. In teaching the children the geograghy of the county in which they live, and of the neighbouring counties, the teacher should try to have access to a county history. Even if he cannot procure a good county history, he can probably extort from his managing committee the purchase of a Murray's guide-book to the county, or at the worst, get the gift of a cast-off Post Office Directory. Anything that will help him and his staff to avoid mere statistics in their geography lessons, to disentangle the important from the unimportant details, and to throw a colour of human interest over the whole work, should be caught at and utilized. Some day, perhaps, we may have a good series of school books of reference, and every school will have its teachers' library of such books. Meantime it is the teacher's duty to search eagerly for such materials as he can get, and to use them with ingenuity; and it is the inspector's duty to encourage such resource, to help the less ingenious or baffled teacher, by suggesting to him new ways and means to utilize the third best, where the first and second best cannot be attained. Both inspector and teacher should make the most of their materials, remembering always that it is the bad workman who blames his tools. Meantime as a small but practical suggestion, let me recommend every teacher, who has not already got it, to get Hughes's *Geography of British History*, and see whether the use of such a book as that does not throw a new life into the geography lesson, both for teachers and scholars.

50. *Summary of Points in a Geography Lesson.* To sum up. The

following are briefly the kind of points which the inspector will bear in mind when inspecting a lesson in geography: —

(1.) Is it a lesson on physical or political geography, or both? If both, in what respective proportion?

(2.) What preparation has been made for it by the scholars? Are they supplied with the means of home preparation for their collective lessons, required to use them?.

(3.) What preparation has been made for it by the teacher? If it is a lesson on political geography, what has he sought out or read for the purpose of illustrating his lesson?

(4.) Does he use the black board and a blank map?

51. *Inspection of Singing.*—I have now followed the inspector in the course of his inspection of the boys' school to the close of morning school, when the time has arrived for him to hear the singing of the school and watch the dismissal (see § 20). If the inspector is not musical, that is to say, if he has not been so endowed by nature and so trained as to be able to judge whether children sing in time and in tune, taking breath and delivering the voice properly, giving the right value to notes, and the right musical pronunciation to works, and keeping their parts honestly and yet concordantly in harmonies; unless, in short, he is at least so much of a musician, as to have a true ear, and to have learnt singing, he will not propose to inspect the singing of the school. A teacher who is musical will find out very speedily whether the inspector has or has not the requisite musical endowments. The older children will perceive it, and the effect will be injurious. To sit and listen to school singing and to make no remark upon it, or remarks which show want of musical discrimination, is worse than useless; it is a waste of the inspector's time, and a lessening of his authority. No inspector ought to inspect in a subject in which he has not thought more, and does not know and feel more than those whom he inspects. An inspector, therefore, who is not qualified to judge of the school singing will not waste his valuable time by listening to it. But every inspector can, if he chooses, do something for the cultivation of music in our schools, which will be much more valuable than "hearing school singing." He can, if he does not already possess the requisite knowledge, learn a grammar of music, the rudiments of the science; and when he is asked by a teacher to listen to the singing of the scholars, he can reply, "No. But I will ask a few questions in music." In nine

schools out of ten, I fear, in England (though not perhaps in Wales), this reply will cause dismay. The teacher will answer that his scholars sing only by ear. And if an unmusical inspector can use his influence to stop this unsatisfactory practice, and to introduce the proper and only really satisfactory way of teaching singing into a school, he will, in my opinion, however naturally unmusical, have done almost as much to advance the knowledge and culture of music in England, as he could have done under present circumstances if he were himself a musician. *What we want at present in our elementary schools is not so much singing by ear, as the power of reading music and some acquaintance with musical science.* And this every inspector who will take a little trouble, can qualify himself to encourage and enforce.

52. *Close of the Morning School.*— If the inspector has not had an opportunity of watching a change during the course of the morning's inspection, he will make a point of carefully watching the dismissal at the close of the morning's school. And, when that is over, if he has any reason to think that he will be hurried at the close of the day's inspection, he will take that opportunity of speaking to the pupil-teachers and principal teacher, on the work which the pupil-teachers have done in the examination, on their teaching, and on the impressions which his inspection has, so far, made on his mind. But it will be much better, of course, that he should do this at the close of the day, when his knowledge will be more complete; and I will therefore defer treating of this part of the subject, till I come to the close of the day. An interval of at the very least an hour is desirable after such a morning's work as that I have described, both for the inpector and the school. And the inspector who intends to do a good afternoon's work, will not, if he can help it, allow it to be shortened.

OFFICIAL DEPARTMENT.

QUESTIONS AND ANSWERS.

Q. Does the law require school districts to build and maintain a division fence between the side owned by the district and adjoining land occupied for farming purposes?

A. There is no special law relating to this matter. The school dis-

trict occupies the same position that any other owner of the site would occupy, and must build and maintain one half of division fences with adjoining owners, unless by terms of deed special liability to build and maintain all of division fences is assumed by the district.

Q. May a person owning property and paying taxes in a school district in which he does not reside send his children to the public school in that district?

A. No, unless the district at the annual meeting authorizes the board to admit such children to the school. Persons can claim rights only in the public school of the district wherein they reside. This is a question constantly recurring. Two conditions, and two only, are required for attending the public school anywhere, viz.: legal school age (between four and twenty years), and residence in the district. Tax-paying is not a condition, anywhere.

Q. When a town board of supervisors neglects or refuses to act upon a petition for alteration of the boundaries of school districts wholly within the town, what remedy have the petitioners? Can they appeal to the state superintendent?

A. No remedy appears to be provided in such cases. No appeal can be taken because the matter is pending and undecided. Action upon the petition is deferred, and the matter may be called up and determined at any time.

Q. Can a school district at a special meeting authorize a person to use the school house evenings for a singing school?

A. No. Such votes are advisory only. The law vests the case and custody of the school house in the district board, makes the members personally liable for damages to the same when used for any other purpose than the public school, and prescribes the means to be taken by persons desiring to obtain the use of the school house. Entrance to or occupancy of the school house without consent of the district board is a trespass.

Q. The law provides that the day of general election in each year shall be a legal holiday. How, if at all, does the abolition of annual elections affect that provision?

A. In this way. Whenever a general election occurs in November, that day is a legal holiday. This occurs once in two years now. It does not occur this year.

SEMI-ANNUAL SESSION OF THE WISCONSIN TEACHERS' ASSOCIATION, TO BE HELD IN THE CAPITOL BUILDING, MADISON, DECEMBER 27, 28 AND 29, 1887.

Tuesday, December 27, 8 P. M.

LECTURE—"The Value of Music as an Educational Factor." . . . . . H. E. Holt, Supervisor of Music in the Public Schools, Boston, Mass.

Wednesday, December 28, 9 A. M.

1. Business.
2. Report of Committee on "Elimination of Unprofitable Work from the Curriculum of Graded Schools." Principal A. R. Sprague, Chairman.
3. Discussion—Led by Prof. S. Y. Gillan, and Miss Ellen C. Jones.
4. Report of Committee on "Wisconsin Educational Exhibit at Chicago." Dr. J. W. Stearns, Chairman.
5. Paper—"The Character of Mathematical Instruction in our Common and Secondary Schools" . . . . . Prof. T. A. Smith, Beloit College.

Wednesday, 2 P. M.

1. ADDRESS—"Some Lines of Progress in Our Educational Work" . . . . . Hon. Jesse B. Thayer, State Sup't.
2. Discussion—(*a*) The Relations of the University to the High Schools. Led by Principal W. G. Clough.
   (*b*) "The Institute Problem." Led by Prof. H. D. Maxson, and Hon. W. H. Chandler.

Wednesday, 8 P. M.

GRADING THE COUNTRY SCHOOLS.—(1.) Paper—"The Experience of one County Superintendent" . . . . . Supt. Betsey M. Clapp.
(2.) Paper—"Course of Study in Common Schools" . . Prof. L. D. Harvey.
(3.) Address—"Grading Rural Schools in Illinois" . . . . . John Trainer, Dacatur, Ill.
(4.) General Discussion.

Thursday, December 29, 9 A. M.

1. Reports of Committees.
2. "THE WISCONSIN SUMMER SCHOOL OF SCIENCE."
   (*a*) "What Can It Do for the High Schools" . . . . Principal A. W. Smith.
   (*b*) "Its Future Outlook" . . . . . Prof. E. A. Birge.
   (*c*) Discussion.
3. Report of Committee on "Legal School Age." Dr. J. W. Stearns, Chairman.
4. General Business.

HOTEL RATES.

The Park Hotel will entertain members at $2.50 per day; or $2.00 with two in a room. Fires extra.

The Capital House will entertain members at $1.75 per day.

RAILWAY RATES.

All persons attending the meeting must buy full-fare tickets for the going passage, and take a "certificate" from the agent selling.

At stations on the C., M. & St. P. Ry., C. & N. W. Ry., and Mil. & No. Ry., tickets should be bought *to Madison.*

At stations on the Wis. Cen. Ry., G. B., W. & St. P. Ry., C., B. & N. R. R., and M. S., St. M. & A. Ry., tickets will be sold, going, to junction points with lines touching Madison.

In all purchases of tickets *going*, the purchaser should demand a "certificate" in order to insure reduced fare returning. The certificates will be endorsed at Madison by the W. T. A. as orders for sale of return tickets.

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Wooster, Elizabeth,	Milwaukee.

EDITORIAL.

GRINDING teachers is not now extensively practised in our larger cities. It has descended to those of fourth and fifth ranks. In some of these there still linger the old, red-tape, round-about processes of administration and management, which seem to be devised to waste the vitality of teachers over formalities. To be explicit, one of these is the daily marking system, with its averages, and averages of averages, and reports, and so on. It effectually kills out true teaching. Who can vitalize a whole class, adapt his work to each one, keep up a play of questions and answers like forked lightning, if he is required to give to each pupil who is hit a fair per cent. for his answer? The whole recitation is perverted by such a process. The class ought to think, not to parrot; they should be taught by their errors, not punished for them; the teacher should teach not mark. He is not a Rhadamanthus but a teacher. And all the averaging and averaging — what does it amount to? Only a device to stultify pupils and kill teachers. It is not necessary; it is not useful; it *is* thoroughly pernicious. Another of these grinding formalities is correcting exercises. Exercises must be prepared in school, and they ought beyond question to be so used that the pupil may get from them discipline in accuracy. Correcting them and returning them to him does *not* secure this. He has no use for the stale, marked-up exercise. Correct it when it is fresh and has an interest, and by getting him to think about it, and correct it himself, and thus to become critical — this is the object of the exercise. We ought to correct not the exercise but the boy, and this not by a black or red mark but by forming a desire and a habit. What a

lamentable waste of energy to be thus "barking up the wrong tree!" Cease working over papers and work over the pupils. Still another grind is that of examination papers. These must be, but not every week nor every month. Nor is the good of them the ranking. Why will school officers pervert them? Result of reading the examinations is — marks; result of marks is — reports; result of reports is — ? An examination is a teaching exercise; it should teach the pupil what his weaknesses are and spur him up to overcome them; it should teach the instructor what needs to be done for the pupil. Have fewer examinations and make them more useful. They are not to kill teachers with, nor to mark boys by, but to be helpful to both. Co-operation — secure that in correcting examinations and you will secure their benefit. Do not grind teachers. Their business is to teach, and for this they need all their vitality.

We are gaining in directness in school work. To discern the main end and make for it with as little delay and waste of strength as possible is the secret of economy. Now there can be no question that one of the main ends of teaching is to bring young persons as speedily as possible under the inspiring influence of great minds. To get into the presence of the master — that is for most of us the chief object; because we shall derive from him not only the incidental drill in formal elements which all young persons need, but also that quickening of spirit, that deepening of insight, that elevation of taste and purpose which is rightly formative all around. That is why the introduction of classics as reading into the schools in place of so much droning over the reading book is so hopeful a sign of progress. We have spent too much time in getting ready — so much that we have missed the opportunity to turn the readiness to account. But the art of reading may be best acquired by using to the most advantage the measure of skill already possessed. Reading is but a means, and the sooner the pupil is put upon using it for its right ends the more rapidly will he progress. Proper supplementary books the pupil will read in order to get something out of them, while he learns the task from the reading book too often only to meet the demands of the teacher. The classics of our literature which children can read and enjoy ought to be placed before them early in life, that the strong delights of this first intercourse with books may bind them lastingly to that which is best. Experience is rapidly demonstrating that in the time usually given wholly to the school reader a considerable knowledge of good literature, of history and of travel may be acquired, not only without additional effort, but with greater ease and delight. We have only to go as directly as possible to the main end in order to make our processes both more attractive and more productive.

Montaigne pithily says: "Like birds who fly abroad to forage for grain and bring it home in their beaks without tasting it themselves, so our pedants go picking knowledge here and there out of several authors, and hold it at their tongue's end only to spit it out and distribute it amongst their pupils." Pedant obviously stands here in its original and now obsolete sense teacher, as we find

it, for example, in Shakespeare. On realizing this one is almost forced to ask whether this passage does not show how the word came to have its modern meaning. Is it true to any extent that teachers learn in order to teach and not in order to know? The very essence of pedantry lies in this. The pedant loads up his mind only to unload it again, and makes seeming to know take the place of knowledge. He is always learning and yet not coming to know anything. A real scholar makes his acquisitions part of himself, and speaks or teaches from his own mind. He teaches things and subjects, not text-books, and speaks what he sees for himself and therefore knows, not what he has remembered from some authority. But Montaigne's birds have deteriorated. They have given rise to successors worse than themselves. These successors no longer think it necessary to "pick knowledge out of several authors;" they can get all they need out of one. Neither do they "bring it in their beak;" they can bring it in their book. What have they to do then? In many cases only to read a printed question and ascertain that the unfortunate birdling can match it with the appropriate bit of the text. We had thought this sort of teaching dead, or banished to remote country districts, but it was our misfortune not long since to hear a high school recitation in English Literature in which the teacher did just this and nothing more; and because the supply of scraps did not reach to the end of the hour the "matching" was begun over again from the beginning! How often the teaching of geography and history amounts to just this "matching" exercise is perhaps indicated by the number of text-books issued specially prepared for it. Not an inconsiderable number have questions and answers sandwiched in together, others have the text hashed up into quotable sentences each provided with a full-faced catch word, and many more provide accurately adjusted questions at the bottom of the page. Similar in plan are many popular text-books on science—notably on physiology. We are therefore forced to believe that what is called teaching is still far too often this stupid game of "matching." But Montaigne's birds, of either sort, are not wanted in the school room. Teachers' examinations ought to be so conducted as to put the whole flock of them to the woods.

An interesting and significant educational development is taking place in Michigan, Wisconsin, Illinois and some other western states. It is the direct outcome of the State Universities, and may be properly cited as another proof of the importance of the higher institutions to the growth of universal elementary education. These State Universities naturally look to the public high schools as their feeders, and accordingly seek to establish a good understanding with them, and relations of mutual helpfulness. As a result the system of accredited high schools has grown up, under which the State University agrees to receive without examination the graduates of such high schools as have been inspected and formally approved and placed upon its accredited lists. In this state the system has already attained considerable growth. Its advantages are tolerably apparent. The public schools have grown up from the people, and reflect pretty

fairly the wishes of the communities where they exist and the needs of modern life. To maintain itself the school must meet local wants, and this is its first proper function. It has, therefore, developed on the side of science, as being most closely allied to the practical activities of life. On the other hand the college retains and fosters the ideal of liberal culture. Its traditions emphasize the value of refinement, of breadth of information, and of the speculative side of man. This ideal must be retained as well as the other, since there is room for both in the development of a people. They need to interact freely upon each other, that the one may be made less sordid thereby and the other less impractical. Now the development of modern courses in the Universities, resulting in part at least from the evident tendency of the people away from the older studies, has opened up the possibility of once more establishing vital relations with the schools. On the side of the Univerities these relations bind them to modern life and fill them with students. On the side of the high schools they afford a stimulus to better work, and keep before their pupils broader ideals of attainment and culture. These react favorably upon the communities. It certainly is a further function of a good high school to elevate the ideals of the community in which it exists, and to open up to capable and ambitious youths the way to further attainments. This the relation with the University enables it to do. This relation continually teaches the pupils that the high school is not the highest round of the ladder. Moreover, it makes further ascent easier for them. The prospect of an entrance examination, with possible failure and return in disgrace, is more of a check to youth than it ought to be. It is a bugbear, to be sure, but bugbears often deter from action, and are not to be maintained unnecessarily. Moreover, the variety of courses in the Universities not only meets the high schools as they now are but provides for their development. They will not be less but more likely to reach out towards preparing for the stronger courses, as local circumstances make this possible, because of the organic relation already established. Thus this arrangement reconstructs the educational ladder which, according to Prof. Huxley, should reach from the primary school to the University, and makes the latter what it ought to be — the head of the educational system of the State.

OUR DRAWER.

READING CIRCLE MATTERS.

WORK FOR THE THIRD MONTH.

ELEMENTARY. PAGE — pages 137 to 186. HISTORY — to page 113. PHYSIOLOGY — Chapters 7, 8 and 9.

ADVANCED I. QUICK — to page 95. FITCH — Lecture IV. POLITICS — to chapter 20. HISTORY — to page 420.

ADVANCED II. SULLY—chapters 7 and 8. BROOKE—to page 68. SWINTON—to page 146.

THE USE OF THE LIBRARY.

A high school principal writes: "Our circulating library has been in use a month, and everybody is delighted. Idleness is dying out, lessons are better—to say nothing of information gained and reading habit and literary taste necessarily growing. As I expected, our most troublesome boys are most eager to get these books. Books lie on teacher's desk for a month, and 'good lessons' and 'clean hands' are the only conditions."

A READER'S NOTES.

THE CORAL ISLANDS. The *Nineteenth Century* recently contained an important article by the Duke of Argyll, entitled "A Great Lesson." That lesson is that "neither the beauty, nor the imposing character, nor the apparent sufficiency of an explanation may be any proof whatever of its truth." This lesson is taught by what seems to be a complete displacement of Darwin's famous theory of the origin of the circling reefs, atolls, etc., of the Pacific ocean. This theory, one of the results, and the most striking one, of Darwin's famous voyage in the ship Beagle, has long been accepted as beyond challenge, has grown to be considered one of the certainties of science, and is found stated without limitation in our physical geographies for schools. Impressive and satisfactory as that theory has been, it seems to have received a stunning blow from the discoveries of one of the scientists on board the Challenger on her recent voyage of investigation, Mr. John Murray. Darwin held, as is well known, that these reefs and atolls, rising from depths at which the coral insect cannot live, are the evidence of a grand and extremely slow depression of the land, which has been going on for untold ages in the regions of the Pacific. Mr. Murray shows that this supposition is not necessary, and that the reefs can be explained in another way; more than that, he brings positive proofs that the other explanation is alone adequate to cover all the phenomena involved. His theory, in brief is this: The reefs begin to grow nearer the land than they now are, where the waters are shallower and adapted to the coral, but gradually recede, owing to the operation of natural forces, towards the deep ocean. The forces work without and within the reef. Without, the waves are breaking off fragments, which sink into the sea and gradually accumulate at the foot of the existing wall. In this way a substructure is gradually built up to the point where the corals can live and work, when the true reef grows over it by their action. Meantime, inside, the reef is disappearing from a different cause. The quiet sea water tends gradually to disintegrate the dead coral by chemical action—for the living coral is always on the sea wall of the reef, and that on the interior is dead. Mr. Murray seems to have proved that this disintegration of the inner wall must take

place and actually does take place. Thus the reef is always growing towards the deep sea and wasting towards the land—in other words is slowly retiring into the deeper waters. What proof, then, have we of gradual subsidence? Moreover, this is another illustration of the adjustment or balance of forces in nature. The coral insects are continually taking the lime from the water to build the sea wall of the reef, and the quiet lagoon is restoring the lime by dissolving the inner wall.

THE GRAPHOPHONE. This last invention of Edison is in reality but a development of the phonograph, which by it is rendered useful in a great many ways, and is likely to modify profoundly our ways of reporting, of doing correspondence, even of recording business transactions. The following description of the instrument will give some idea of its possibilities. The Graphophone is a machine so constructed that when a person speaks distinctly, in an ordinary tone, into a bell shaped tube placed in close proximity to his lips, a needle will record upon a composition cylinder the words spoken. This needle ploughs indentations into the surface of the composition, which vary with the inflections of the voice. The cylinder is kept in motion by a treadle, electric, or other motor. The cylinders may be used over and over again to repeat what has been dictated to them, and so far from the articulation becoming more indistinct through continued repetition, it becomes clearer. The Graphophone can be readily arranged to make any corrections that may be desired in the course of the dictation. By placing close over the ears of the operator two audiphones, the machine will distinctly re-articulate to the operator whatever has been dictated to it. The articulation is given back at an ordinary rate of speed. The work may be very readily transcribed upon the type-writer, or with a pen, for the machine can be made to dictate any number of words back at any rate of speed, and to stop until the operator has transcribed them. The Graphophone is extremely simple in construction, and not liable to get out of order. The cylinders hold from 1,000 to 2,000 words each. They may be sent by mail as second class matter, and the cylinder of one Graphophone will fit any other Graphophone. The cost of such cylinders is two and one-half cents each. They are not liable to injury by being kept for future use, and occupy in filing away not more than three times the space that ordinary writing paper would, containing the same number of words. Boxes in which to file them are furnished.

WISCONSIN SCHOOL HOUSES.

Is it not true that Wisconsin ranks low as regards her school houses in the rural districts? Almost any building is good enough for the district school house, and almost any waste place a suitable location. Iowa takes this matter in hand as a state, and there are no such desolate school houses there as are far too common in our state. Yet we boast that Wisconsin ranks among the first in educational matters.

I believe the school house and surroundings are potent factors in the education of scholars. If the ideal of the neighborhood is low enough to tolerate a "ram shackle" school house, while the homes are comfortable and well furnished, the boys and girls will grow up with very little of that public-spirit which should be a characteristic of the true American citizen. These things weigh on my mind, because I see few signs of improvement around me. Just as long as the old school house will hold together, no new one will be built.

I have an old school house in mind in writing this — one of the many, not the poorest I have seen in Wisconsin by any means — where I have taught several terms. It is an old farm building, about sixteen by twenty, situated midway between a frog pond and a rank barnyard. There are no trees in the yard and there is no paint on the building, nothing to make the place attractive. It goes without saying that the place is a little oven in summer. When I tell you that it is boarded half way up inside, while the remainder of the wall is covered with cracked and ragged plastering; that the floor is thin and worn; that the room is heated by a large base-burner in front, near the teacher's desk, you will understand that it is far from comfortable in winter.

To be sure the banking was piled high and we had a thermometer to regulate the temperature of the room by, but we never could get the floor warm at the back of the school room. The pupils and I unadvisedly perhaps, used to build castles in the air about the new school house which would surely be built soon. But one evening, while visiting at the home of some of my little scholars, I found their parents did not sympathize with us. "If the school house is cold have it banked up — way up to the windows," said the mother. "Mercy! we can't afford to help pay for a school house while we are in debt!" As I felt sure that it would be a good many years before they would be out of debt, the prospect was far from encouraging. Then came the second drouth, and even the few who were interested did not think it advisable to broach the matter at school meeting, and told me in confidence afterward, that the old school house would probably stand for twenty years.

Now it seems to me that the state makes appropriations for objects of far less importance than this, and no one complains. It is not enough that she will lend a district the money at 7 per cent. interest; any private individual would do the same, providing the district was wide a wake enough to give him the chance. Why not encourage and stimulate them a little by offering to present at least one hundred ($100) dollars to any district which would use it in building a needed new school house? The additional tax would hardly be felt, and the public at large would be improved.

KATE L. PECK.

I CANNOT praise a fugitive and cloistered virtue, unexercised and unbreathed, that never sallies out and sees her adversary, but slinks out of the race, where that immortal garland is to be run for not without dust and heat. — *Milton.*

MATHEMATICAL SECTION.

THE MATHEMATICAL SCHOLARSHIPS AT CORNELL UNIVERSITY.

Every year nine scholarships are given to persons entering the Freshman class at Cornell University, each of them worth two hundred dollars a year, and good upon certain conditions, for four years. Who shall receive these great prizes is determined by competitive examinations, and the number of competitors is tenfold the number of winners. Three of them are awarded, usually, for excellence in Latin and Greek, and six of them for excellence in mathematics.

The general effect of this system of scholarships has been to bring to the University a body of enthusiastic young scholars who delight in hard work, and who set a high standard of excellence for their associates. In every instance the holders of the mathematical scholarships have proved themselves thoughtful and thorough; and the whole tone of the department of mathematics has been raised by their presence.

The names of the schools where the winners are prepared for the University are published every year in the University Register, together with the names of their teachers. It is certainly a very high honor to both school and teacher.

COACHING.

The best tutors train their men with the same care as a race horse is trained, or a boat crew. It is of little use for a man to go into these great examinations without training; it is a waste of time and strength, and almost hopeless, for one to attempt his own training. At the English Universities "coaching" for examinations has become almost a profession in itself, and as an art it has been carried to a very high degree of perfection.

The examinations are each three hours long, and they are conducted in writing. A man must be trained, therefore, to think with his pen in his hand, and to use his utmost strength for three hours. There are three subjects—arithmetic, plane geometry, and elementary algebra, and three papers are set, one for each subject. Generally there are twelve questions upon each paper. It seems a small matter, but it is really a very important one—a man must learn to let alone what he cannot do, and give his whole time to what he can do readily; and it is only practice that can teach him this simple lesson. He must be free from the nervousness that unmans him, and keep only so much of it as quickens his pulse and drives him to his utmost endeavor; and only the nerves of a veteran are equal to this strain.

It is assumed that the pupil has a fair knowledge of the three subjects examined in when he goes into training; the tutor's object is to supplement this knowledge, broaden it, deepen it, make it more accurate and more available.

A good share of the training may be by means of written drill examinations, given at short intervals, every day perhaps, and covering work previously assigned. The next day the tutor goes carefully over the answers with the pupil,

points out errors and defects, suggests better methods, and emphasizes important principles.

There is no better way to learn to do a thing than to do it; and no better way to make one's knowledge broad, accurate and available than to make careful preparation and then to write down what one knows, with a wide-wake critic to point out what he does not know, and that wherein he is misled by a vague half-knowledge, following it up by a sharp cross-examination, pupil and tutor face to face.

THE WORK TO BE DONE.

These examinations are competitive; the candidates far outnumber the scholarships to be awarded, and the best men (and women) win. They take a wider range than the ordinary pass examination, and the tutor must lead his pupil out of the beaten track.

In detail: let the pupil solve a great many difficult examples in arithmetic, of all sorts; and when he has solved one, let him go carefully over his work and state the reason of every step. Let him not rely upon answers given in the text-book, but learn to test his work himself. Let him practice upon these examples, doing the same thing again and again, till he acquires the habit of quickness and accuracy. Tired examiners have little patience with blunderers or slatterns. A model answer is one that says all that ought to be said, and says it in the right order, but adds not one superfluous word. Let the pupil learn to write a clean and clear manuscript, and to put his work in forms that can be understood at a glance. He may use abreviation if clear and well chosen; but much depends on perspicuity and neatness of arrangement, both in statements and in computations.

Besides solving examples, the pupil must look sharply to the definitions, so that he can clearly distinguish between things that are nearly alike. If in his arithmetical work he can make available his knowledge of algebra, so much the better.

The general suggestions regarding arithmetic apply equally to geometry and algebra; but in geometry a special weakness is shown in the matter of original proofs, and in algebra in that of the statement and proof of the general principles.

In geometry the pupil generally does the book-work well; but if he be asked to invent proofs, *i. e.* to think, he breaks down. In this matter of invention there are two kinds of work, very different in character, but both of a high order. The first is the finding of the key to the puzzle, the invention proper; the other is the working out of the logical proof. A bright boy, well guided, takes great delight in this kind of exercise — he likes discovery, he likes independent research, he likes conquest, and with every success he scores one more victory. In mental stature and strength a boy grows fast while at this work, and if he would win at the examinations, he must do a great deal of it. One of the winners last year made more than eight hundred such proofs. A variety of this work, very useful, is the anticipation of an author's proof, and a subsequent critical comparison by the pupil of his own with that of the author.

There is another thing, generally neglected, that the boy will delight in — the drawing of the figures with rule and compass, accurately and neatly, and according to geometric principles. It is very different from invention, and less difficult, but almost as important. In the drawing he uses his geometry, and by using it, he lives in it and makes it a part of himself, always available.

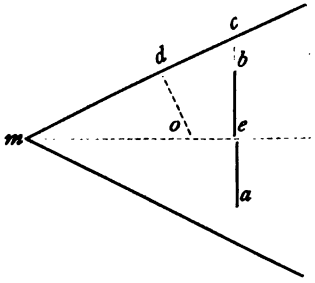
And still another thing of great profit is the habit of running back, step by step, from this proposition to those on which this depends, and so back, back, to the primary definitions and axioms.

As above noted, the special weakness in algebra is in the statement and proof of the broad underlying principles. Proficiency in solving problems, even difficult ones, is quite common, and the training got from it is very valuable: but of the philosophy of algebra, most pupils know little — they think of algebra as a collection of problems; *e. g.*, if they find the highest common measure of two numbers, they can rarely state and prove the theorems on which their rules depend; or if they solve a quadratic equation, they cannot give an intelligent discussion of such equations, or show what results follow from particular conditions; or even if a definition be called for they can make it neither precise nor comprehensive.

Again, many of the operations of elementary algebra, quite within the comprehension of the dullest boy, seem to be wholly neglected; *e. g.*, synthetic division, cross multiplication and the use of detached co-efficients. The tutor must give his pupils a steady drill in algebraic operations, and he must lead them to a careful study of algebraic principles. Algebra is the most important subject in the whole range of mathematics; and this is work that is entirely within the power of any good teacher; it is work that must be done by every man that hopes to win one of these great prizes; it is work that is done by all that do win them.— *The Academy.*

ANSWERS TO PROBLEMS.

"Required to find the center of a circle which passes through a given point and is tangent to two intersecting lines." [JOURNAL OF EDUCATION, p. 475.]



A is the given point, *m e* the bisector of the angle formed by the two intersecting tangents. Draw *a b* perpendicular to *m e*, making *e b* = *e a*, and produce *a b* to *c*. Lay off *c d*, a mean proportional between *a c* and *b c*. *O*, the intersection of *m e* and a line from *d*, perpendicular to *d c*, is the center of the required circle. S. Y. GILLAN.

The readers of this column will certainly appreciate the above very neat so-

lution of what seems to have proved a difficult problem. The following questions are suggested as likely to prove helpful in utilizing this solution as a basis for a class exercise:

What property of a chord of a circle led to the proposed construction of $a\ b$?

What fact about tangents suggested the construction of $d\ o$?

What two steps in above demonstration suggest, independently of each other, that a *second* circle is possible?

In what position of a will the two possible circles co-incide?

When will they differ most?

PROBLEMS.

Will some one please furnish a full solution of the following?

1. Find values of x and y in these equations:

$$\sqrt{x} - \sqrt{y} = x^{\frac{1}{2}}\ (x^{\frac{1}{2}} + y^{\frac{1}{2}})$$

$$(x + y)^2 = 2\ (x - y)^2$$

2. If the sum of the odd digits of any number differs from the sum of its even digits, by o or a multiple of 11, that number is divisible by 11. Why?

For example, 737 and 819291 are divisible by 11, since $(7 + 7) - 3 = o$, and $(8 + 9 + 9) - (1 + 2 + 1) = 22$.

IN THE SCHOOL ROOM.

WORDS FOR THE WORKERS.

INDEED I rather suspect that children derive impulses of a powerful and important kind from reading things which they do not comprehend, and therefore that to write down to children's understanding is a mistake. Set them on the scent and let them puzzle it out.—*Sir Walter Scott.*

I COMMEND to you the school teacher who cares for atmospheres, impressions and tone quite as much as for text-books, tasks, and for accuracy in recitation. I ask you to help him when he tries to make his school room a place of neatness and brightness with plants, flowers, pictures, statuettes, window and wall hangings, and whatever beside may give ideas of taste, of purity, of restfulness, and which will fill his soul with images and memories to go with him to the end of life, a source of inspiration and a safeguard against evil. We have been in school rooms that were thus ornamented and beautified from month to month, from year to year. Flowers and vines graced the windows, engravings and portraits adorned the walls, statuary beautified odd niches, objects of interest and curiosity relieved the corners, a congenial and happy teacher presided, and bright children filled the room with sunshine from happy faces.—*J. H. Vincent.*

I HAVE very little faith in rules of style, but I have an unbounded faith in the virtue of cultivating direct and precise expression. It is not everybody who

can command the mighty rhythm of the greatest masters of human speech; but every one can make reasonably sure that he knows what he means, and whether he has found the right word. It has been said a million times that the foundation of right expression in speech or writing is sincerity. It is as trne now as it has ever been, and it is not merely the authors of books who should study right expression. It is a part of character. As somebody has said, by learning to speak with precision you learn to think with correctness; and firm and vigorous speech lies through the cultivation of high and noble sympathies.—*John Morley.*

SOME TEACHING DEVICES.

IN CIVICS. Superintendent Aldrich, of Quincy, has a practical way of emphazing "Civics." by furnishing each school promptly with a copy of the town report, and holding the teacher responsible for making such use of it as shall interest and enlighten the pupils. He has also a copy of the warrant of the town meeting pinned upon the inside of the door of every school room in town several days before town meeting.

IN GEOGRAPHY we conquer spelling and location in this way. A pupil stands before the school and says, "I have something in mind that begins with—" giving a letter that begins some geographical name. At once hands are raised. The one who succeeds in giving the name must first spell it correctly and then point it out, when he in turn propounds another. This game seems never to grow old and I find it fixes location and spelling firmly.—*Ex.*

IN COMPOSITION. One game was hiding the desk key while one pupil was in the hall and writing an exact statement of the place of hiding, length of time each pupil was in finding it. We spent half an hour in playing the game and taking notes, after which the composition was carefully written out with ink.—*Popular Educator.*

IN DISCIPLINE. If pupils are disposed to pass out with noise and bluster yet with good nature, let them get ready a few moments before the hour and sit with wraps on while you read a portion of an interesting historical novel. *Ivanhoe, Quentin Durward, The Last of the Mohicans, or The Green Mountain Boys* will answer the purpose. Your noisy pupils will forget themselves in the story and will pass out talking of its stirring scenes. Contemplation takes the place of boisterous conversation and shouting. It is surprising how interested children, who are, like the poet Longfellow, children grown up, become in listening to stories read by the teacher. *The Youth's Companion, St. Nicholas, or Wide Awake; Golden Days* will furnish you with abundant material for story reading. Try it on a noisy school. They will study better for having heard a story.

IN MAP-DRAWING. Ask every pupil to provide himself with a half-sheet of tissue-paper, and a pair of scissors. A convenient time for this exercise is the last hour Friday afternoon. First have the map traced, cautioning the pupils

to be careful not to move the left hand, which is holding the tissue-paper in place, after the first line has been drawn. After this has been done, supply the pupils with a sheet of manilla on which to transfer the map. Then the map is to be cut out, and the more care given to this part of the work, the better the outline will be. A map is now prepared which may be used as often as necessary, instead of once, which is the case with the printed maps. Use it to trace outlines with upon the board or on the slates according to size of model.

GRAPHIC STORY-TELLING. It is well to supplement the ordinary story telling of the primary grades by true stories and awaken an interest in history. Prominent stories in American history may be selected in chronological order and a few facts impressed. I have interested my pupils the past year by drawing a monument upon the blackboard which they can see grow as the weeks go by. I use colored crayon simply because it makes it more attractive. The following subjects were selected: "The Mound Builders, Northmen, Columbus, De Leon, De Soto, Jamestown, Plymouth, The Revolution, Lexington, Bunker Hill, and Washington." We began with the Mound Builders, using earth colored crayons, and have added a block with name and date for each story. We use the brightest and gayest colors for important events, and mingled the red, white and blue, and decorated the monument with the national flag at the Revolutionary period. These stories are frequently reviewed and some of them have been written. They are used in spare moments as subjects for sentence-building or of free expression.— *Sarah J. Barber.*

HUMORS OF THE SCHOOL ROOM.

—The retorts between students and professors are without number. "Professor, I am indebted to you for all I know," says a graduate, trying to be pathetic at parting. "Pray don't mention such a trifle," is the reply. "Does my question embarrass you?" asks a tutor. "Not at all; it is the answer that bothers me." "How do you dare swear before me, sir?" "How could I tell that you wanted to swear first?" A freshman hesitates over the word *connoisseur*. "What do you call a man that pretends to know everything?" "A professor," replies the student, who thinks that an easy one. "How is power applied in this machine?" asks a professor, as he starts it, "It is turned by a crank," is the giggling reply.

— The youthful idea of a school has many illustrations. "Where are you going?" "To school." "What do you go for, to read?" "No." "To write?" "No." "To count?" "No." "What do you go for?" "To wait for school to let out."

—A five-year old returned from his first day at school disgusted with the ignorance of his teacher. "Why, she kept asking questions all the time. She even asked how much 2 and 2 were."

OUR BOOK TABLE.

SOME BOOKS ON FRŒBEL AND HIS SYSTEM.

The increase in kindergarten literature in this country is quite remarkable, and may probably be taken as an indication that the institution is steadily making for itself a place in our educational work. It is certainly exerting a very decided and helpful influence upon the processes of our primary schools. Pertaining to this subject we find on our table this month THE AUTOBIOGRAPHY OF FRŒBEL, (Reading Circle Library No. 3, E. L. Kellogg & Co.; price, 30 cts.,) a mere fragment to be sure, but a very suggestive one. It is taken from a letter to the Duke of Miningen, and is almost wholly occupied with a statement of the formative influences of his childhood and early maturity. The interest and value of the fragment lies in this fact. The most useful thing for us to know about any really original man is what shaped him. This helps us to understand his nature and to estimate correctly the importance of different influences in moulding the character of children. With Frœbel the emotional life is supreme. He is introspective from an early period, more than usually susceptible to strong feelings, and develops the decidedly fanciful, even mystical tendency of thought, which repels practical minds from his writings. But by this path he arrived at great truths—almost literally felt them out, rather than thought them out. He tells us: "Uninterrupted self-observation, self-reflection and self-education is the key to my life, early shown and continued to the later periods of it. To arouse, animate, awaken and strengthen man's joy in and power for working continually on his own education had been and remained the fundamental necessity of my educational work." This is a great truth, and involves in itself the theory of the kindergarten. In addition to this very valuable fragment the pamphlet contains Mr. Joseph Payne's lecture on Frœbel and the Kindergarten System, and a very slight notice of his educational work and views.

The second book referred to above is FRŒBEL'S EDUCATION OF MAN, translated by Prof. Hailmann, and issued in Dr. Harris' admirable "International Educational Series," (D. Appleton & Co.; 332 pp.; $1.50.) It is very satisfactory to have this educational classic made accessible at length to English readers in so excellent a translation. Prof. Hailmann has not only translated the work, but inserted in the text, in finer type, numerous expositions, notes, applications and so on, tending to made clearer the somewhat abstruse and involved original. There are some of them of considerable length, and always pertinent and helpful. It will be a clear gain for those who are interested in the development of this view of education to turn from the works and discussions about Frœbel to the words of the man themselves. They are words worth listening to. We can cast out the mystical element, the allegorical interpretations of nature, the transcendental philosophizing and there yet remains more than enough to repay the reader for his pains. We have in this book a discussion of the fundamental principles which led to the establishment of the kindergarten and

were embodied in it. The author sees the importance of educating the feelings —much neglected in our systems—and the ways of doing it; but more than all he presents a philosophy of life which, whether we accept it or not, will promote high thinking and noble aspiration, and tend to make teaching not a mere formal exercise of practical methods, but a constant endeavor to understand life more deeply and to help others to realizing its best fruits.

The third book is PRIMARY METHODS AND KINDERGARTEN INSTRUCTION, by W. N. Hailman, (A. S. Barnes & Co.; 166 pp.) It presents the practical side of the kindergarten; or rather, it is an application of the ideas and devices of the kindergarten to the primary school. The author, as is well known, is superintendent of the public schools of La Porte, Indiana, and in conjunction with his teachers has worked out in practice, and proved the value of the applications which are here described. They are, as the author points out, closely allied to industrial education, but industrial education in its rational as contrasted with its narrowly practical aspect. Their aim is to give the young learner another means of expressing himself, through the work of his hands, and by expressing himself to grow in strength and completeness. The book is a class room manual, telling clearly what to do and how to do it. It takes first the gifts and then the occupations, and points out when and how they may be used in the primary school, not only to furnish busy work, but also to promote the natural and systematic development of the young pupils in knowledge and skill.

THREE GERMAN GRAMMARS.

COMPLETE GERMAN MANUAL, by Wesley C. Sawyer, (John C. Buckbee & Co.; Chicago; $1.20), is so arranged that the grammar of the language is given by itself in the first 118 pages, and in the second part exercises, vocabularies and notes, to be used with the first part at the discretion of the teacher. One feature of the exercises arrests attention. They are made up as far as possible from the gems of literature, which both in thought and expression are fitted to arrest the attention, and worth being fixed in the memory. This is an admirable departure from the stale and senseless matter of ordinary exercises. The arrangement above mentioned has been adopted with a view to the use of the book by young students, who need to follow rather the plan of reading and talking first and grammar afterwards; and by older ones who can best invert the order. It was an an excellent idea to add to the exercises those in German correspondence, which familiarize the learner with epistolary forms and usages. Equally happy was the introduction of Auerboch's charming story of "Joseph and Benjamin," as an introduction to continuous reading. The book is thoroughly equipped with vocabularies, tables of irregular verbs and full indexes, and will be found convenient, brief and practical.

A GERMAN GRAMMAR, based on the Public School Grammar of A. L. Meissner, of Queen's College, Belfast, by Edward S. Joynes, (D. C. Heath & Co.; 386 pp.) may more properly be considered a new work, so much has the orig-

inal been changed in preparing this edition. The work, which is believed to be a complete elementary grammar, is divided into three parts, each abundantly supplied with exercises. The first is a drill on the accidence of the language, which is very complete and thorough. The second, on the derivation of words, is a unique feature, admirably carried out, and, we believe of great practical utility. The third part is devoted to syntax, which is very systematically presented and abundantly illustrated with examples. Throughout it has been the purpose of the author to make a large use of parallels and contrasts with English grammar, the value of which will be at once apparent. The thorough and scholarly character of this book is especially gratifying.

GRADED GRAMMAR LESSONS, by William Eysenbach, revised and re written by William C. Collar, (Ginn & Co.; 360 pp.), pursues essentially the inductive plan of presentation. Each lesson is opened with a German sentence which is to be learned. This is explained so far as necessary to bring out what is new in it, and the exercises are designed to give practice in the new principles thus learned. It is progessive, ingenious, and full of variety,—a teachable book. Something of system and scientific thoroughness is lost by this method, and the editor has aimed to remedy the defect in his revision. This has been made while using Eysenbach's book with his classes, whose difficulties taught him where to change and what to explain and expand. The exercises are very abundant, and they seem to us admirably contrived. Something of continuity is given to them as soon as possible, fables, brief stories, narratives and so on being introduced early together with short poems which are to be committed to memory. The book is well equipped with tables, vocabulary and other helps.

—AMERICAN NEWSPAPER ANNUAL, 1887, (N. W. Ayer & Son, Philadelphia; 1170 pp.), presents an enormous amount of valuable information regarding the periodical press of this country and Canada. With this is combined in condensed form statistics regarding counties, cities, towns, industries, politics, etc., making the book a sort of encyclopædia of this country. Here are thirty pages filled with lists of publications devoted to some special interest, as religion, agriculture, education, art, etc.; and eight pages to lists of publications in foreign languages. These show two in Chinese, three in Finnish, four in Welsh, one in Slavonic, one in Russian, and one in Gaelic. Of course in such tongues as German, French, Spanish, Scandinavian, and so on, the number of publications is very great. We are a great people, a composite people, and above all a reading people, as such a publication as this bulky volume of names and statistics of newspapers emphatically demonstrates.

—The last issue in the Riverside Literature Series, for supplementary reading, is THE VISION OF SIR LAUWFUL AND OTHER POEMS, by James Russell Lowell. (Houghton, Mifflin & Co.; 15 cts.) A few introductions and explanatory notes are supplied to help young readers, but in general it is enough to lay before them American classics such as these. They are their own best explan-

ation, and may be trusted to do their refining and humanizing work, if only they can be got into the hands of the children. The price places numbers of this series within the reach of all.

— ANIMAL LIFE IN THE SEA AND ON THE LAND, by Sarah Cooper, (Harper & Bros.; 413 pp.) is a very attractive and beautifully illustrated zoology for young people. The treatment is characterized by directness, simplicity and good sense, avoiding the dryness of the ordinary text-book maker and the senseless padding of the professional writer for young people. It begins with the sponge, and traces a gradual development in the animal kingdom from the simplest forms up to the highest. The honest love of the author for her work has produced an honest book, up to the times, fairly free from errors and well adapted to interest and instruct intelligent young people; not to load them up with meaningless facts, but to make them see and delight in the significance of structural peculiarities as adapting the various creatures to the part they are to play in the drama of life.

— SCOTT'S ROB ROY (Ginn & Co., 507 pp., 70 cts.), is the latest issue in Ginn's series of "Classics for Children." The edition is provided with an introduction by Charlotte M. Yonge, brief but very useful notes at the bottom of the pages, and an excellent glossary at the close of the volume.

— STUDIES IN CIVIL GOVERNMEMT, by William A. Mowry, (Silver, Rogers & Co., Boston, 250 pp.) begins with a brief study of town and city government, the object of government, public schools, taxation, and the relations of town, state and nation; and then, after a sketch of the history of the origin of this nation, proceeds to a systematic discussion of the constitution of the United States. This plan is adopted as on the whole in the judgment of the author better suited to pupils of the grammar grades, for whom the book is prepared. From that which is near and presumably familiar, a better foundation is secured for interest in and understanding of the federal government. He distinguishes three stages in the development of government, the military, corresponding to a period of danger from without, the police govenment, corresponding to one of danger within, and the modern which seeks to promote the public welfare." He writes clearly and vigorously within the comprehension of grammar grade boys, but in such a way as to put them to thinking for themselves. The book seems to us deserving of attention from those who are teaching this subject.

— ELEMENTARY PSYCHOLOGY AND EDUCATION, by Joseph Baldwin, (D. Appleton & Co., 293 pp. $1.50) is the latest issue in Dr. Harris' International Education Series. An effort has been made to simplify this subject, so as to bring it within the easy reach of those not trained to abstract thinking. Some of the devices for this are admirable, as for instance the diagrams and graphic representations and topical analyses, which are numerous and very ingenious. The text has, as it seems to us, suffered from the effort to use short sentences and a lively manner. It is not made easier but more difficult to read and understand by this device. It gives a broken, limping character to the style which is not quite pleasant — some pages indeed are even distressing, as for instance 236

and 237. We should have much preferred, also, to see less of authoritative affirmation and more of appeal to experience, reflection and observation. Too much of it is, in our judgment, of the sort of material which burdens the memory without ministering to real insight. But the task undertaken is one of extreme difficulty, and perfect success ought not to be expected.

—THE BOOK OF FOLK STORIES, by Horace Scudder (Houghton, Mifflin & Co., 152 pp.) is a book for the youngest readers made up of the most famous folk-stories known to English speaking people, Cinderella, Dick Whittington, Jack and the Bean Stalk, Tom Thumb, the White Cat and others like them. They are told with great simplicity, the author's aim having been to think out the stories as a child would think them. The materials of them belongs to the world's child-literature, and the dress gives this added attractions. They are for the children to read, re-read, enjoy and tell, and are of rare interest for this purpose.

— ELOCUTIONARY STUDIES AND NEW RECITATIONS, by Mrs. Anna Randall-Diehl, (Edgar S. Werner, University Place, New York, 60 cts.) claims to be made up of entirely new selections, not to be found in other books of this class, and contains general directions for self-culture in reading, and analyses of many of the selections, with notes, suggestions and helps of various kinds towards the effective rendering of them. We have looked over the selections with considerable interest. They are new, and on the whole tinged with that "staginess" and over-doing which has brought professional reading into deserved disrepute. This will recommend them to persons who enjoy such effects.

— AN ITALIAN GRAMMAR, by C. H. Grandgent (D. C. Heath & Co., 120 pp., 80 cts.), is admirable for its brevity and practical completeness. The student of Italian finds here in a hundred pages all that he needs to know of the grammar of the language, most conveniently and effectively presented.

—STORIES OF OUR COUNTRY, by James Johonnot, (D. Appleton & Co., 207 pp.) is the first part of book third of Appleton's Historical Series. There are thirty-six stories, arranged in chronological order from Ponce de Leon to the battle of Buena Vista, and are admirably adapted for young readers, in whose minds they will early form points of attachment for the subsequent more systematic study of the history of our country.

—STICKNEY'S PRIMER (Ginn & Co., 88 pp.) we know from trial to be admirably adapted to the use of beginners in reading. It is delightful to the child and full of devices and helps for the teacher.

— SHELDON'S MODERN SCHOOL FOURTH READER, (Sheldon & Co., C. E. Brown, agent, 187 Wabash Ave., Chicago,) has met with much favor in the school room. Its selections are of good character, of permanent interest, and well adapted to the grade work.

—THE PRINCIPLES OF THEORETICAL CHEMISTRY, by Ira Remsen, (Lea Brothers & Co., Philadelphia, 318 pp.) has reached a third edition, which is evidence that it meets the wants of a large number of instructors in this branch. This edition is considerably enlarged and thoroughly revised.

RECITATIONS FOR CHRISTMAS (Charles A. Bates, Indianapolis, 25 cts.) is a pleasant collection of Christmas pieces in prose and verse, selected and arranged by Margaret Holmes.

— Unity Club Leaflet, No. 11, contains a series of references and helps for the study of the HISTORY OF IRELAND, compiled by Prof. W. F. Allen, (Charles H. Kerr & Co., Chicago, 10 cts.)

MAGAZINES AND PAMPHLETS.

—The *Popular Science Monthly* for December contains articles by Prof. Huxley, Grant Allen, the Duke of Argyll and David A. Wells. "The Boyhood of Darwin" is from the forthcoming autobiography of the naturalist.

— *Education* for November is a philological number — devoted to classics and modern languages. It contains six excellent articles.

— *Scribner's Magazine* for 1888 will contain a series of papers by Robert Louis Stevenson. In the first — "A Chapter on Dreams," he will tell some interesting facts regarding the origin of his famous story Dr. Jekyll and Mr. Hyde.

— In the December *Atlantic* Mr. House discusses The Thralldom of Japan in an effective way, showing the injustice she suffers under existing treaties. Robert Louis Stevenson; Island Democracy in the Caspian; The Soul of the Far East, French and English; Paul Jones and the Armed Neutrality, are other important papers.

— *Littell's Living Age* justifies its title. It is a transcript of the best current English literature of the time, and one who reads it cannot fail to know the best that is thought and written.

— *The Century* has an array of attractions for the new year. The Life of Lincoln is foremost and will continue through the year. Hardly less important are Mr. Kennan's Siberian Papers. New serials by Edward Eggleston and Mr. Stockton, and papers by G. W. Cable, with many more interesting features, assure its readers abundant entertainment and profit.

— What magazine to take for the young people is easily determined. Examine *St. Nicholas.* America has never produced another young people's monthly so rich, varied and attractive as this.

NEWS AND NOTES.

— A number of public spirited ladies in Milwaukee have formed an organization called the "Milwaukee Public School Cooking Association," and petitioned the School Board of the city for the use of such room or rooms as may be designated in the seventh ward school building to be used in giving free instruction in cooking and domestic economy. They propose to furnish a first class teacher for the work, to maintain strict order and discipline, and to work under the surveillance of the principal of the school and of the city superintendent. The council have conceded to them the use of the neces-

sary rooms, and the instruction is to be furnished without cost to the pupils of the public schools or to the city. The experiment is an interesting one and will be watched with solicitude. Our readers will recall the excellent account of a similar school in Boston contributed to a former number of the JOURNAL by Mrs. W. F. Allen.

—The enrollment in the evening schools in Milwaukee has reached 2,231, and the average nightly attendance 1,593.

—The Milwaukee School Board have instructed the city superintendent to prepare a plan by which the 7th and 8th grades of the city schools may be enabled, with their teachers, to visit the city museum at stated times; and also to arrange for lectures upon such parts of the contents as may be suitable for the purpose, to be delivered to the pupils by the custodian or other suitable person.

—The new principal of the Waupaca Schools, Mr. F. A. Lowell, is a graduate of the Oswego Normal School, four years' course.

—The attendance at the Whitewater Normal School has been large during the past quarter, and an unusually large addition of new members was received at the opening of the second quarter.

—The thirty sixth semi-annual session of the Sauk County Educational Association was held at Reedsburg on the 25th and 26th of November. A varied program and good attendance made the occasion very profitable.

—Supt. Addie Neff, of Dunn County, has issued a circular to the school officers and teachers of the county, laying before them, among other things, a list of text-books in the different branches of elementary instruction, from which she recommends that a choice be made for adoption in the various schools of the county; she also explains the free text-book system, which has already been adopted in a number of schools in the county.

—The high school at Alma, C. D. Kipp principal, has lately been presented with 240 volumes of choice books by the Alma Library Association. They have been put up in the elegant new high school building, and we learn are used diligently by the pupils of the school. This school has recently been added to the State Free High School list.

—We learn that Prof. J. N. Humphrey, of the Whitewater Normal School, is about, to issue a new and improved edition of the very serviceable work on word analysis prepared by him and Prof. Johnson. It is a book which renders this study interesting and profitable, and we are glad that a second edition is called for.

The people of Brandon have been enjoying a series of Educational lectures, delivered by different persons of this state in the Congregational church. The interest in the schools has been considerably increased thereby.

—The Institute, held at Ashland Nov. 10–12, by Prof. L. H. Harvey, proved interesting and profitable. The enrollment reached 58, a number of teachers coming up from Bessemer and Ironwood in Michigan—some of them lately in the Wisconsin Schools. The high school at Ashland under the charge of J. M. Turner, has adopted a four years course of study, and is growing in vigor and in members. This institute at present reaches and helps three or four of the northern counties of the State.

—A very pleasant reception was given in Milwaukee, Nov. 10, to Prof. Paul Binner, who is in charge of the city day school for deaf mutes. Prof.

Binner had recently returned from Europe, where he had been at the expense of the Wisconsin Phonological Institute, for the purpose of studying the improved methods of educating and treating deaf mutes in the best schools of articulation in Europe. He gave an interesting account of his visit and observations. The enrollment in the Milwaukee deaf mute school has reached 38. Five teachers are employed in it and one normal training student. Several of the pupils were formerly in the State school at Delavan. In the Milwaukee school the sign language is not used, but all are taught to articulate.

—Supt. Wiswall, of Sauk county, has issued a circular letter to the pupils in the district schools of his county. He tells them that on his visit he shall look to see that the school house is neat and made attractive by the work of the pupils, drawing, map-making, weaving, etc.; that he shall examine the record of tardinesses and absences, and calls their attention to the new school library law, in which he justly thinks that they ought to be especially interested. He urges also holding faithfully to the graded course of study until it is satisfactorily completed.

—The high school at Waterloo and the high school at Bayfield have been added to the State Free High School list since it was published in the JOURNAL. There are other applicants for admission.

—This Free High School list, it will not be overlooked, does not contain the high school of Milwaukee, La Crosse, Manitowoc or Marinette, and perhaps of some other cities. This is because these schools have not yet complied with the conditions of law prescribed for their admission to the list.

— The error of the printer in our last issue in making the enrollment of the Racine county institute 10 is very apparent It should have been 100. Door county had 58.

—The city schools of Sheboygan are developing rapidly. It is but two or three years since the new high school building, a very attractive and commodious edifice, was erected, and this city has this year completed and equipped a handsome new school in the fifth ward; and in the eighth ward a building to cost upward of twenty thousand dollars is already enclosed. Even thus the accommodations will not meet the demands of the growing city. The city also maintains a flourishing Kindergarten with an enrollment of one hundred. The high school course is now four years, and will fit for the Modern Classical Course in the State University.

—The high schools at the following places have lately been added to the accredited list of the State University, in one or more of its courses: Necedah, Sheboygan, Lake Mills, Oregon, De Pere, Whitewater, East Eau Claire and Boscobel.

—A successful and profitable city institute was held at Racine Nov. 18 and 19. It was conducted by Prof. S. Y. Gillan, assisted by Miss Sykes of the Milwaukee Normal School. Prof. Stearns lectured Friday evening and Prof. Maxson Saturday morning.

— The new school buildings in Madison are rapidly approaching completion The addition to the high school is considerably larger than the original building, and will provide ample accommodation for the large high school. It will be in use probably during the present month. The ward building is also nearing completion. The text-book committee of the school board reported in favor of introducing the free

text-book plan into the primary schools. The report reviews the arguments in favor of and against the plan, and makes the above recommendation as an experiment.

— Besides the free high schools of the State there are recorded in the State Superintendent's office 235 graded schools. These are distinct from the ordinary district schools, and usually consist of two or three departments, although a few high schools not found on the State Free High School lists figure among them.

— Twenty-nine cities of this State have city school superintendents who are not also principals of high schools. The salaries attached to these positions, with two or three exceptions, are quite small—under $500, indicating, of course, that the incumbents only give a portion of their time to school supervision.

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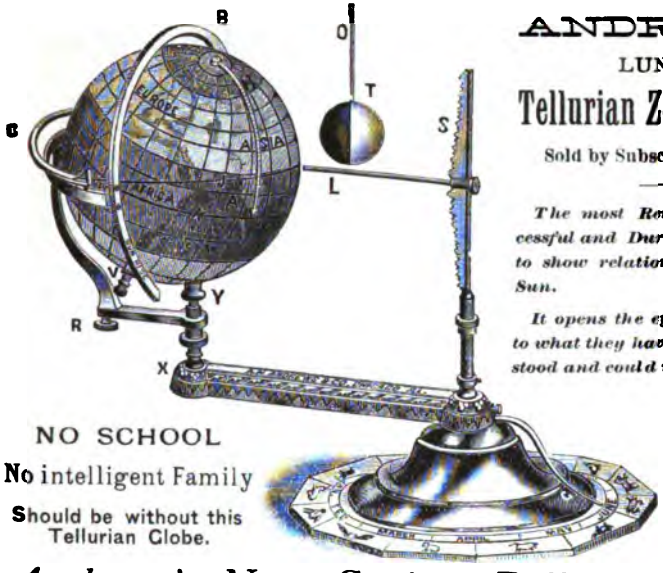

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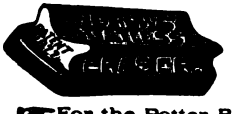

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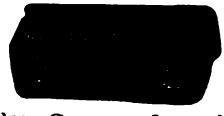

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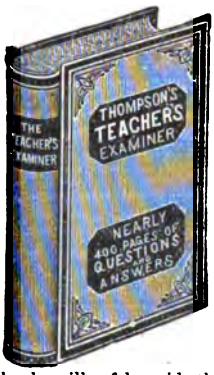

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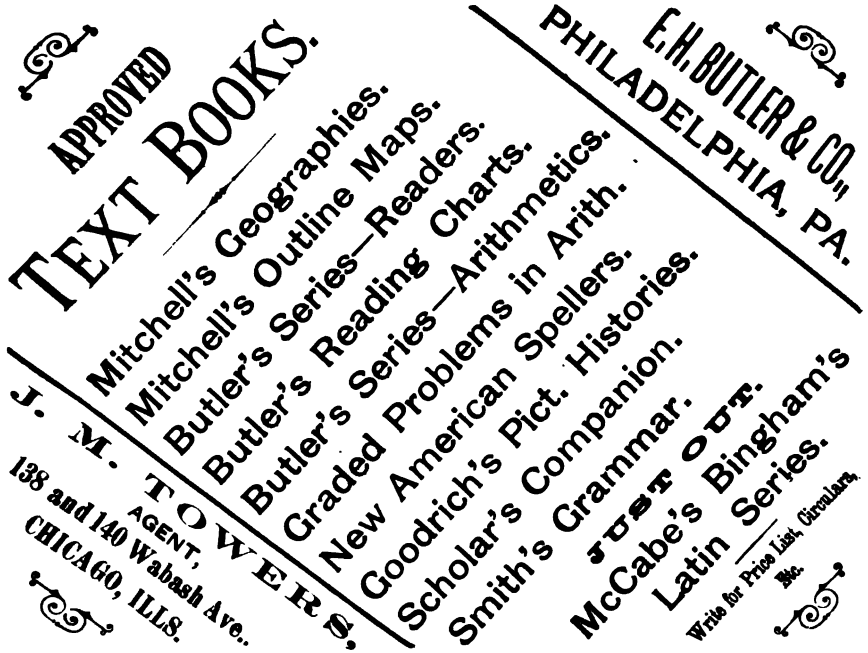

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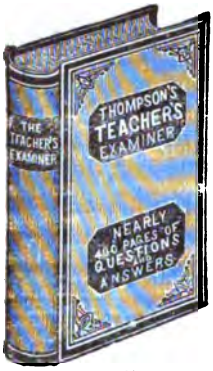

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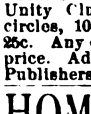

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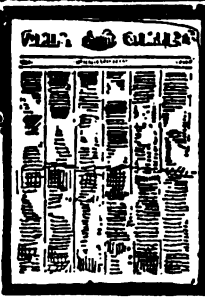

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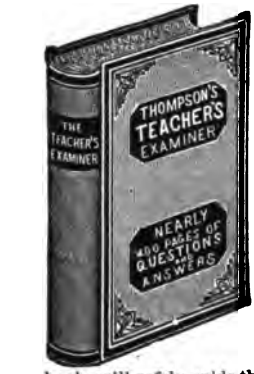

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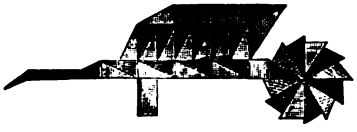

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MADISON, WIS.

Organ of the State Teachers' Association and of the Department of Public Instruction.

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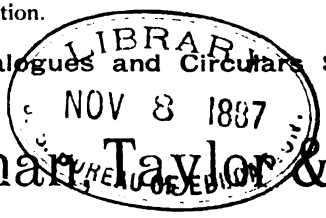

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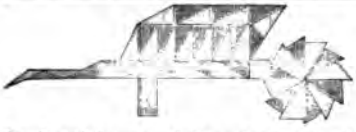

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